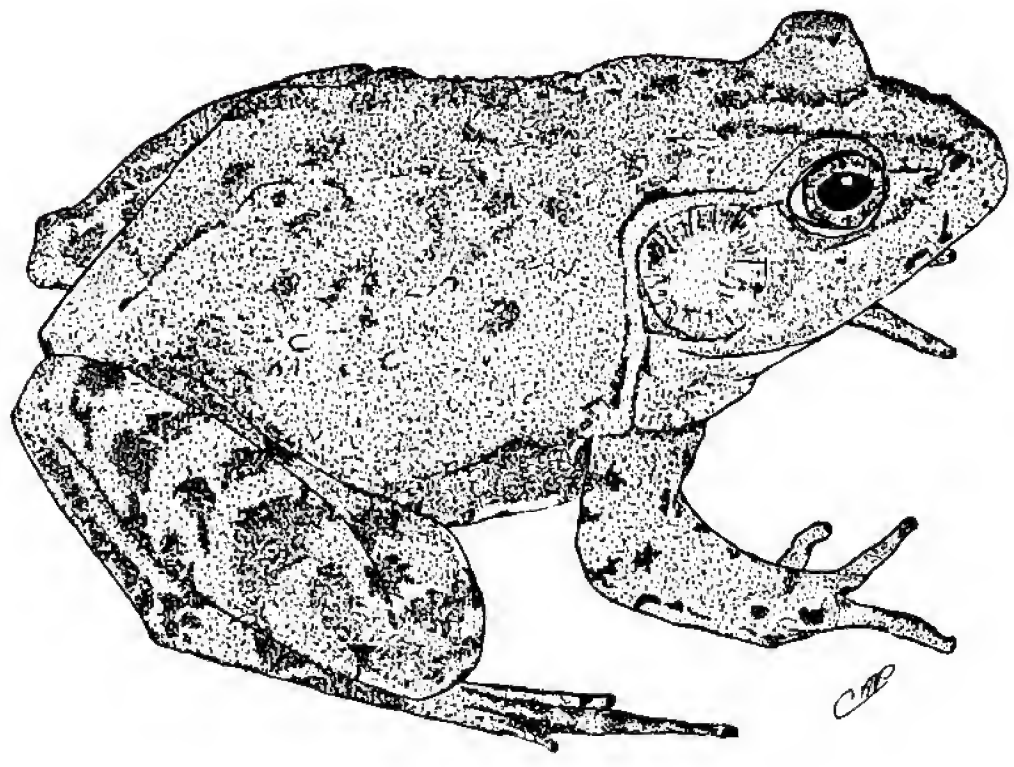
CATESBEIANA



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BULLETIN INFORMATION

Catesbeiana is published twice a year by the Virginia Herpetological Society. Membership is open to all individuals interested in the study of amphibians and reptiles and includes a subscription to Catesbeiana, two newsletters, and admission to all meetings. Annual dues for regular membership is $15.00. Payments received after September 1 of any given year will apply to membership for the following calendar year.

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The principal function of *Catesbeiana* is to publish observations and original research about Virginia herpetology. Rarely will articles be reprinted in Catesbeiana after they have been published elsewhere. All correspondence relative to the suitability of manuscripts or other editorial matters should be directed to: Dr. Paul Sattler, Editor, Catesbeiana, Department of Biology, Liberty University, 1971 University Blvd., Lynchburg, VA 24502 (email: psattler@liberty.edu).

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Manuscripts for consideration of publication in *Catesbeiana* should be submitted to the Editor electronically. Consullt the style of articles in this issue for additional information, including the appropriate format for literature citations. The metric system should be used for reporting all types of measurement data. Computer diskettes or email attachments in Word format is desired for all papers. Submissions concerning the herpetofauna of selected areas, such as a park, city or county, should be prepared in article rather than field note format. Articles will be refereed by the editor and one or more qualified reviewers. All changes must be approved by the author before publication; therefore, manuscripts must be received by the editor before March 1 and August 1 to be considered for publication in the spring and fall issues, respectively, of *Catesbeiana*. Reprints of articles are not available, but authors may reprint their own articles to meet professional needs.

(Editorial policy continued on inside back cover)

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VHS Annual HerpBlitz at Mattaponi Wildlife Management Area, June 22-24, 2012

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Introduction

The Virginia Herpetological Society (VHS) annually selects sites within the Commonwealth and surveys them for herpetofaunal species. The VHS usually selects sites that are within localities lacking any and/or recent official records of native and naturalized reptiles and amphibians. Survey site selection also occurs when a landowner (private or public) requests to have a survey done on their property. Through these surveys, The VHS is able to observe and document distributional, behavioral, morphological, and physiological data. Relative abundance of species may also be assessed during these surveys.

From 22 June through 24 June 2012, The VHS held its Annual HerpBlitz survey at the Virginia Department of Game & Inland Fisheries' (VDGIF) Mattaponi Wildlife Management Area (Mattaponi WMA), in Caroline County, approximately 2 kilometers (1.3 miles) west northwest of the Town of Bowling Green. This property is in the northwestern corner of the Upper Coastal Plain physiographic region. It is a contiguous tract of flat to gently rolling land, with a few slopes that are somewhat steep and considered atypical of the surrounding topography, consisting of 1,029 hectares (2,542 acres). It contains a diversity of habitats, including mature upland hardwood and mixed forests, managed loblolly pine forests, wetlands (including lakes formed from old oxbows from old river channels, as well as vernal pools in some of the wooded areas), riparian areas along the Mattaponi River, the river itself, some recent clearcut areas, and an open area of gravel. The Mattaponi River runs through the northern portion of this property and along the southeastern border of the property. The South River runs along the southernmost and southwestern border of this property. This property also lies partially within the buffer area around Fort A.P. Hill. Consequently, the U.S. Department of Defense contributed funds from its Army Compatible Use Buffer Program to help The VDGIF purchase the land for use as a WMA. Fort A.P. Hill will be able to use 202 hectares (500 acres) of the area to establish one of the Army's first wetlands mitigation banks. Ducks Unlimited also contributed towards the funding of this land acquisition, due to the wetlands and wetland restoration opportunities available on this property.

Study Sites

Site 1: Southwest, on Saturday, 6/23/2012 (south of Paige Road, west of main/southern entrance area w/kiosk)

1a: At road, near entrance: 38°03'33.90"N, 77°23'21.70"W,
1b: At oxbow lake: 38°02'58.70"N, 77°23'30.20"W,
1c: At power line: 38°03'04.90"N, 77°23'41.60"W, and
1d: Along path in pine and open areas: 38°03'16.30"N, 77°23'47.80"W.

This area was accessed via an old logging road that leads west from the kiosk/parking area of the southern entrance into the WMA. Just west of the kiosk area, the road leads through mostly managed loblolly pine forest, with some open areas and vernal pools. One large vernal pool near the road was habitat for many amphibians. Moving further south on this road led to portions of wetlands surrounded by mixed forest, an open power line, and portions of an

old oxbow lake area with marshy and swampy habitats. There were many blueberry bushes along the edge of the forest and oxbow lake areas. Species include oak, tulip poplar, hickory, American holly, beech, sweetgum, and Virginia pine. The understory is open and contains mostly blueberry bushes.

Site 2: Southeast, on Saturday, 6/23/2012 (south of Paige Road, east of main/southern entrance area w/kiosk)

2a: At logging road next to river and hardwoods: 38°03'03.50"N, 77°22'57.30"W,
2b: Swamp, beaverdam, edge of oxbow lake: 38°02'51.80"N, 77°22'52.40"W,
2c: Hardwood forest, north of oxbow lake: 38°02'45.10"N, 77°23'14.20"W,
2d: Hardwood forest next to oxbow lake/wetland at power line: 38°03'09.40"N, 77°23'31.90"W,
2e: Along oxbow, floodplain, with hardwoods: 38°03'10.80"N, 77°23'41.90"W.

This area was accessed via an old logging road (gravel trail/road) that leads east from the kiosk/parking area of the southern entrance into the WMA. Just east of the kiosk area, the road leads through an area of early succession forest, timbered in recent years, then through an open area for the power line right-of-way. Moving further south on this road led to portions of mixed forest next to the Mattaponi River, more open areas, and portions of old oxbow lakes with marshy and swampy habitats, as well as some vernal pool habitats in some of the wooded areas. Tree species include oaks, tulip poplar, hickories, maples, American holly, beech, sweetgum, and Virginia pine. Understory included American holly and greenbrier.

Site 3: Northwest, on Saturday, 6/23/2012 (north of Paige Road, westernmost entrance into the WMA and west of private farm that is surrounded mostly by WMA property) (38°04'15.36"N, 77°24'07.38"W)

A gravel logging road leads along and through mostly mixed hardwood and some pine forest in an upland area. There are small openings in the forested areas along the road, and towards the end of this section of road there is a large open area with edge habitat between the open area and forest. The forested areas near this edge include very wet and swampy habitats.

Site 4: Middle northern area, on Saturday, 6/23/2012 (north of Paige Road, an entrance just to the east of the Mattaponi River)

4a: At pond/old gravel pit and cut over area: 38°03'48.7"N, 77°23'21"W
4b: Along old section of Paige Road, including old bridge over the Mattaponi River and road along mostly hardwood forest, just west of the river: 38°03'37.5"N, 77°23'14.88"W.

This section of the WMA is accessed just east of the Mattaponi River and its junction with Paige Road. This access road is normally locked to the public. The road travels along a cut over area, with some mixed hardwoods to the west along part of this section of road. The road ends at a pond that is an old gravel pit. The pond had blooming spatterdock in it. Along the edge habitat and beginning to grow in the cleared area were loblolly pine and Virginia pine. Approximately halfway along the road that leads to the pond, there was a junction with a road that led to the west, an old paved road that was formerly a section of Paige Road, including an old bridge over the Mattaponi River. This section of road and river were surrounded mostly by mixed hardwood forest. This forest included oaks, beech, American holly, sassafras, tulip poplar, red maple, highbush blueberry, blackberry, river birch, and native azalea.

Site 5: Northeast on Saturday, 6/23/2012 (north of Paige Road, the easternmost entrance into the WMA, with a kiosk and parking area)

5a: Along logging road in pine woods: 38°04'07.2"N, 77°22'59.33"W,

5b: Near logging road in pine woods, near clear cut and stream: 38°04'02.65"N, 77°23'06.67"W,

5c: At marsh with pine woods, near clear cut: 38°04'04.08"N, 77°23'16.84"W,

5d: Near logging road at area that borders pine woods, clear cut and wetlands: 38°04'24.00"N, 77°22'58.59"W,

5e: Northernmost portion of logging road in this section, bordered by some pine and mixed woods and clear cut area: 38°04'33.43"N, 77°23'08.94"W.

This section of the WMA has a public access, just west of the railroad (which is to the east of the border of the property), with a gravel road and parking area with a kiosk. As one travels north along this access road, the habitat is mostly pine woods that have been managed for harvest and currently has lots of understory along with mature pine trees. Side roads off this access road travel west into areas that have been clear cut and areas of wetlands, streams, and some old oxbow lakes. Plant species in this section include: Virginia pine, loblolly pine, tulip poplar, sweetgum, American holly, blackberry, highbush blueberry, sassafras, wintergreen, ferns, running cedar, birch, ironwood, wild grape, pawpaw, blackjack oak, sycamore, maple, willow oak, and poison ivy.

Site 6: Southern side of WMA, on Friday, 6/22/2012 (along access road through southern half of WMA)

6a: Along road next to river, next to woods along river and clear cut area on other side of road: 38°03'06.90"N, 77°23'02.30"W,

6b: Along road next to oxbow lakes, where stream from lake crosses road, and the woods surrounding road are mostly pine with some mixed hardwoods: 38°02'34.40"N, 77°23'05.30"W, and

6c: Along road at beaver dam between two oxbow lakes, just west of power line right-of-way: 38°03'06.80"N, 77°23'44.20"W.

See descriptions of Sites 1 and 2.

Site 7: Southern side of WMA, on Sunday, 6/24/2012 (along access road through southern half of WMA)

7a: Near road next to corner of oxbow lake, mixed hardwoods and pine along lake and open area just to the north: 38°02'53.10"N, 77°22'53.22"W, and

7b: Along road at beaver dam between two oxbow lakes, just west of power line right-of-way: 38°03'06.80"N, 77°23'44.20"W.

See descriptions of Sites 1 and 2.

Site 8: Northwest, on Sunday, 6/24/2012 (north of Paige Road, westernmost entrance into the WMA and west of private farm that is surrounded mostly by WMA property) (38°04'15.36"N, 77°24'07.38"W)

See description of Site 3.

Site 9: Northwest at Oxbow Lake, on Sunday, 6/24/2012 (north of Paige Road, travel down access road into WMA as it goes around the back of the private farm property, to the east of this

property, and beside an oxbow lake/wetland) (38°03'52.0"N, 77°24'06.9"W)
Past Site 3, a gravel logging road leads to wooded and early succession areas and an oxbow lake. The lake has some mixed wooded (including oaks and pine) buffer next to the area of early succession habitat, which includes a lot of blackberry. The lake has emergent aquatic vegetation along its edges, and vines of dodder were prevalent amongst this vegetation.

Materials and Methods

On 23-24 June, 2012, the VHS surveyed the herpetofaunal species within Mattaponi WMA. Some of the VHS officers also surveyed on 22 June 2012. The survey resulted in the documentation of 26 herpetofaunal species. A total of 41 participants, mostly VHS members and some guests, assisted with this survey. There were 35 participants on Saturday and 14 on Sunday (6 of the Sunday participants were not present on Saturday). A wide range of collecting techniques were utilized during the survey weekend including hand capture, visual encounter, some road cruising, listening for vocalizing anurans, flipping debris, exploring in and under logs and bark, dip netting in aquatic habitats, and setting crayfish traps and baited hoop turtle traps in aquatic habitats. Digital voucher photos were taken of many of the species. Each group leader recorded all data on data sheets. On 23 June, four groups surveyed five areas (one group looked at two areas). On 24 June, two leaders from the previous day led two groups through two areas. All groups consisted of ten participants or less. See Table 1 for a breakdown of survey effort per study site. Data collected included a site description, species identification, microhabitat, number of animals, any interesting or unusual behaviors of phenotypes, and/or observations of disease or parasitism. The VHS obtains a Scientific Collection Permit biennially from VDGIF in order to conduct all survey events (Permit #44734 for 2012-2013). This permit requires the VHS to annually report all species location data. The data from these reports is entered into VDGIF's statewide wildlife species location databases and systems, primarily the SppObs (Species Observations) Database, which feeds other databases and systems at the VDGIF that are used for research, conservation, and education. Thus, VHS survey activities assist in keeping herpetofaunal data updated for the Commonwealth.

Table 1: The amount of survey effort per research site.

	Site 1	**Site 2**	**Site 3**	**Site 4**	**Site 5**	**Site 6**	**Site 7**	**Site 8**	**Site 9**
Number of hoop net sets	2	2		2					
Crayfish traps	2	2		2					
Number of surveyors	7	9	7	8	9	2	4	10	12
Hours surveyed	5	5	2	3	5	1.5	1.5	2	2
Person hours of survey effort	35	45	14	24	45	3	6	20	24

Results

Over the course of the survey period 26 species were documented (10 anurans, 1 salamander, 5 turtles, 4 lizards, and 6 snakes) with a total of 343 animals captured and identified. Other animals, or parts thereof, were observed but not identified with certainty down to species. This includes an unknown skink species at Site 1a that was under a log on a dirt mound by a field; another unknown skink, an unknown juvenile of the genus *Plestiodon* on a log under bark at Site 2b eluded capture; another unknown *Plestiodon* adult female with eleven eggs at Site 2c

was left undisturbed given the condition; 22 eggs that were possibly laid by *Coluber constrictor constrictor* at Site 2a; and an unknown small tadpole of an anuran species captured in a dip net at Site 9. Table 2 summarizes the 26 species identified and the number of animals observed at different sites (represented by a total of 343 specimens). There were no new county records of species occurring in Caroline County, but four of the species documented only had one record or only had unvouchered records in Caroline County prior to this survey. Hand capture, dip nets, and direct observation led to the largest number of observations. Six baited hoop turtle traps and wire bell traps (crayfish traps) yielded no turtles or other herpetofaunal specimens in aquatic environments. An annotated checklist follows.

Table 2. Summary of the number of animals observed at each site. (* denotes species that were documented only once and/or by unvouchered records prior to this survey.)

Sites/Species	1	2	3	4	5	6	7	8	9
Amphibians									
Acris crepitans	3	49		25	2		25	1	25
Anaxyrus a. americanus					3				
Anaxyrus fowleri			1	1	1				
Hyla chrysoscelis	1			2	1				
Hyla cinerea *							5		
Lithobates catesbeianus		2		1	1		12	1	2
Lithobates clamitans	5	45		1	1		20	2	12
Lithobates sphenocephalus utricularius	2	1			4				
Lithobates virgatipes	1	13		1			5	1	
Notophathalumus v. viridescens	10			2					
Pseudacris crucifer		1	4					6	
Reptiles									
Agkistrodon contortrix mokasen	1								
Aspidoscelis s. sexlineata *					1				
Carphophis amoenus amoenus	1	2		1					
Chrysemys picta picta	1			1	1	1	1	1	
Coluber constrictor constrictor					1				
Kinosternon s. subrubrum *	1	1							
Nerodia sipedon sipedon		1							
Pantherophis alleghaniensis	1		1	1					
Plestiodon fasciatus				1	1				
Pseudemys rubriventris						2			
Scleoporus undulatus		2	2	1	3				
Scincella lateralis				1					
Sternotherus odoratus		1		1					
Storeria dekayi dekayi *	1								
Terrapene carolina carolina	2	3	1			1			
Total Number of animals by site	30	121	9	40	20	4	68	12	39

Annotated Checklist

Amphibians

1. Acris crepitans (Eastern Cricket Frog) – [1b, 2b, 2c, 2d, 4a, 5c, 7a, 8, 9]

Eastern Cricket Frogs were found in a variety of habits including stream edges, in streams, in oxbow lakes and ponds, in leaf litter, and at the edge of the Mattaponi River. Many males were heard chorusing from lakes/ponds, making this the species that yielded the most numerous specimens during this survey event.

2. Anaxyrus americanus americanus (Eastern American Toad) – [5a, 5b, 5d]

Adults were observed, captured, and released in edge habitats, along the edges of trails and woods.

3. Anaxyrus fowleri (Fowler's Toad) – [3, 4a, 5d]

Adults of this species were found in open areas or edge areas, either along trails at the edge of woods, or in open areas near mixed woods.

4. Hyla chrysoscelis (Cope's Gray Treefrog) – [1c, 4b, 5e]

Adult males were heard calling in a variety of forest habitats: pines, mixed hardwoods, and hardwoods.

5. Hyla cinerea (Green Treefrog) – [7a]

Adult males were heard calling near an oxbow lake.

6. Lithobates catesbeianus (American Bullfrog) – [2b, 4a, 5c, 7a, 8, 9]

At most sites, adult males of this species were heard calling. At Site 4a, a subadult was captured and released next to a gravel pit pond. At Site 9, an adult male was heard calling, and a tadpole was captured in a dip net and released at an oxbow lake.

7. Lithobates clamitans (Green Frog) – [1b, 1c, 2b, 2e, 4a, 5c, 7a, 8, 9]

At most sites, adult males of this species were heard calling. At Sites 1b and 1c, juveniles were captured and released at an oxbow lake and a swamp. At Site 8, a metamorph subadult was captured and released at a ditch.

8. Lithobates sphenocephalus utricularius (Southern Leopard Frog) – [1b, 2d, 5b, 5c]

Adult males were heard calling at most sites, in or near oxbow lakes and in a marsh. At Site 5b, one adult was seen hopping along the gravel trail/road.

9. Lithobates virgatipes (Carpenter Frog) – [1c, 2b, 2d, 4a, 7a, 8]

Adult males were heard calling at most sites, in or near oxbow lakes and in a marsh. Adults were seen and photographed at site 7a, as well.

10. Notophathalumus viridescens viridescens (Red-spotted Newt) – [1d, 4a]

Ten larvae were found at Site 1d in an excavated hole. At Site 4a, two small, recently metamorphed red efts were found under bark by the water of the gravel pit pond.

11. Pseudacris crucifer (Spring Peeper) – [2e, 3, 8]

Metamorphs of this species were found on forest floor/grass/leaf litter habitats at all sites.

Reptiles

1. Agkistrodon contortrix mokasen (Northern Copperhead) – [1b]

One adult was observed and photographed as it sat coiled approximately seven meters from the edge of an oxbow lake.

2. Aspidoscelis sexlineata sexlineata (Eastern Six-lined Racerunner) – [5d]

One adult was observed along the edge of a trail, near mixed hardwoods, as it was foraging.

3. Carphophis amoenus amoenus (Eastern Wormsnake) –[1c, 2c, 2d, 4b]

Adults were found in or under logs and/or bark at all sites. The one found at Site 4b was under a log that was in/near the floodplain of the Mattaponi River in hardwoods, and was getting ready to shed.

4. Chrysemys picta picta (Eastern Painted Turtle) – [1b, 4a, 5c, 6c, 7b, 8]

For Sites 6 and 7b, this was the same area on different days, and at the same location, adult females were observed laying (or attempting to lay) eggs in a beaver scent mound (small pile of mud, grass, sticks, and/or stones where beavers deposit secretions of castoreum from their scent glands to mark their territory) on the bank of the swampy area between two oxbow lakes near the gravel road. Another adult female was observed at Site 4a laying (or attempting to lay) eggs on a dirt mound in the cut over area just north of the gravel pit pond. Adults were found basking at Sites 1b and 5c. At 1b, the turtle was found in upland pine woods in a sunny spot on top of pine straw/needles on the ground. At 5c, the turtle was observed on a log in a small lake. At Site 8, a dead adult was found, just the shell, near a swamp.

5. Coluber constrictor constrictor (Northern Black Racer) – [5e]

An adult was found in edge habitat, between forest and tall grass.

6. Kinosternon subrubrum subrubrum (Eastern Mud Turtle) – [1a, 2e]

At Site 1a, an adult was found and captured when crossing the road (Paige Road) near the WMA entrance. At Site 2e, an adult was found in a creek.

7. Nerodia sipedon sipedon (Northern Watersnake) – [2c]

An adult that was approximately 60 cm (24 inches) in length was found on the forest floor away from the water.

8. Pantherophis alleghaniensis (Eastern Ratsnake) – [1a, 3, 4a]
At Site 1a, a juvenile was captured and released when it was found crossing the road (Paige Road). A large adult, approximately four feet in length, was found at Site 3 on an upland hardwood forest floor. At Site 4a, a recently shed skin of an adult of this species was found under a piece of tin in the cut over area just north of the gravel pit pond.

9. Plestiodon fasciatus (Common Five-lined Skink) – [4b, 5b]

At Site 4b, a juvenile to almost subadult of this species was found, eventually captured, and released on the bridge over the Mattaponi River, which used to be part of old Paige Road. It was found basking and then began fleeing. At Site 5b, an adult was found on a pine tree being quite active.

10. Pseudemys rubriventris (Northern Red-bellied Cooter) – [6b]

Two large adult females were found along the gravel road in woods, not far from an oxbow lake and stream. This was just after a late-day, soaking rain storm.

11. Sceloporus undulatus (Eastern Fence Lizard) – [2a, 3, 4a, 5a, 5b, 5c]

Adults were found at all sites. At Site 2a, the specimen was identified as an adult male, found in a hardwood forest. At Site 3, one was found on a log along the gravel trail/road next to the hardwood forest, while the other was a large female that was found and caught when she was on the side of a tree trunk along the edge of the hardwoods by the gravel trail/road. The female was covered in dried mud and appeared to have recently laid eggs (her belly was large but loose). At site 4a, an adult was observed basking, and then fleeing, on a burnt log in the cut over area just north of the gravel pit pond. At Site 5a, another adult female was found under logs next to the base of a tree. She was very lethargic and gravid, likely getting ready to lay eggs. At Sites 5b and 5c, adults were found on the side of a pine tree and on a log, respectively.

12. Scincella lateralis (Little Brown Skink) – [4a]

An adult was found, captured, and released when it was resting under an old piece of tin on the ground of the cut over area that was just north of the gravel pit pond.

13. Sternotherus odoratus (Eastern Musk Turtle) – [2b, 4b]

Only shells of deceased adults were found at both sites (one at each site). At Site 2b, the shell was found beside an oxbow lake. At Site 4b, the shell was found in the cut over area just east of the Mattaponi River at the old bridge. This shell appeared to be burned.

14. Storeria dekayi dekayi (Northern Brownsnake) – [1c]

Only one subadult was found during this survey It was in a log under bark near the power line.

15. Terrapene carolina carolina (Eastern Box Turtle) – [1c, 2b, 2c, 2e, 3, 6a]

A total of seven Eastern Box Turtles were observed during the weekend. At Site 1c, two adult males were found, both appeared to be basking. One was on pine straw/needles in the pine woods, the other was in grass on the trail/road with bright yellow on the head and legs and did not attempt to hide. At Site 2b, only the shell of a deceased young turtle was found. At Site 2c, an adult male was found eating a mushroom. At Site 2e, a young turtle was found along the hardwood floodplain of an oxbow lake. At Site 3, a young or subadult was found on the hardwood forest floor. At Site 6a, an adult male was found after a late-day, soaking rainstorm in a puddle or water-filled rut in the gravel trail/road. This part of the road was near the Mattaponi River and hardwoods.

Discussion

This was one of the first events of its kind to be held on VDGIF's recently acquired property, the Mattaponi WMA. The property boasts a diversity of habitats, with potential for habitat enhancements. Though this survey resulted in many species and specimens being documented, there was a noticeable lack in salamander species. The red-spotted newt (*Notophathalumus viridescens viridescens*) was the only salamander documented during this survey. The lack of salamanders was most likely due to the time of year this event took place. In this part of the Commonwealth, late June is often, as it was in the case of this event, too warm for most salamander activity. This year in particular became rather hot and lacking in rain starting around early to mid June. July, August, and into early September are usually too hot and dry to have successful surveys for salamander species in this portion of the Commonwealth,. There were also habitat disturbances, such as timbering activity, on this property prior to VDGIF's acquisition of it. The disturbance in forested habitats likely does not currently support a large number of salamander species or individuals. There are also a few large stands of planted pine trees from previous pine plantation management. This habitat may limit the diversity of species, particularly in its state in many parts of the property, where the pine forest has gained a high density of understory. VDGIF staff plan to perform prescribed burns to these areas in the near future in order to improve the habitat.

The VHS and VDGIF would like to revisit this property for a herpetofaunal survey in a few years, likely at a different time of year, to see if herpetofaunal diversity may increase and may be better documented. In a few years, prescribed burns performed on this property will likely yield improved/enhanced habitats that may support more diversity and higher abundances of herpetofaunal species.

Although salamanders were not well documented during this survey, the large oxbow lake and wetland habitats, as well as riverine habitats along the Mattaponi River, provided ample

documentation of many anuran species. Amongst the most highly recorded species were the eastern cricket frog (*Acris crepitans*) and green frog (*Lithobates clamitans*). One interesting species that was documented during this survey, which was also a treat for many participants to see and/or hear, was the carpenter frog (*Lithobates virgatipes*). This species is usually found only in extreme southeastern Virginia, but is also previously known in Caroline County within Fort A. P. Hill Military Reservation. Additionally, there have been a small number of records in other parts of Caroline County and in neighboring King William and Hanover Counties. Documenting a large population during the survey at Mattaponi WMA, adds to the already well documented populations within nearby Fort A. P. Hill. In Virginia, this species shows an unusual Coastal Plain distribution, in some of the most southeastern portions of Virginia's lower Coastal Plain, and then in the most northwestern portions of Virginia's upper Coastal Plain. There is an unusual gap between these populations where this species has not been documented.

A few species of turtles were observed during Friday evening of the event (22 June), immediately following a thunderstorm with heavy rain. Two large northern red-bellied cooters (*Pseudemys rubriventris*) were spotted along one of the logging roads, both females presumed to be out to find a place to lay eggs in the ground that was softened by the rain. An adult male eastern box turtle (*Terrapene carolina carolina*) was found in a different area of the same logging road, soaking in a rain-filled rut in the road. Also, another area of the road that passed along a beaver swamp produced a female eastern painted turtle (*Chrysemys picta picta*) in the process of laying or attempting to lay eggs in the bank between the road and the swamp. Turtle traps were set Friday evening and checked on Saturday, but were unsuccessful in capturing more turtles. Other turtle specimens were found during survey activities on Saturday and Sunday. Adult female eastern painted turtles were observed on at least two more occasions that weekend either laying or attempting to lay eggs. Apparently, conditions were good for turtle egg-laying, but not for trapping turtles in aquatic habitats. Buhlmann, Tuberville, and Gibbons (2008) mention that turtles may go without feeding in response to changing seasons. Perhaps the recent rise in temperatures triggered this type of non-feeding response in the turtles of this property, and thus their lack of feeding behavior kept them from entering the traps.

The numbers and diversity of snakes was not high during this event. Perhaps the conditions were not optimal for finding snake species. More night surveying may have yielded better numbers for snake species and individuals, given the high temperatures experienced during the days of this event. Some snake species aestivate during the hottest and driest portions of summer.

For this survey, the VHS was able to confirm observations of four species that previously only had one and/or unvouchered official records in Caroline County. These species include: the green treefrog (*Hyla cinerea*), eastern six-lined racerunner (*Aspidoscelis sexlineata sexlineata*), eastern mud turtle (*Kinosternon subrubrum subrubrum*), and northern brownsnake (*Storeria dekayi dekayi*). The eastern six-lined racerunner is often difficult to find, but given this species prefers days when temperatures rise fast and early in the day, this event provided good conditions to find a specimen.

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Virginia Herpetological Society Survey of Back Bay NWR and False Cape State Park

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Introduction

Back Bay National Wildlife Refuge was established in 1938 and is located in the independent city of Virginia Beach. It is one of over 545 refuges in the National Wildlife Refuge System administered by the U.S. Fish and Wildlife Service. The Refuge contains 3,667 hectares (9,062 acres) of wildlife habitat on the Currituck Banks Peninsula and includes a barrier island typical of those found along much of the U.S. Atlantic and Gulf Coasts. Habitats include beach and large sand dunes, maritime forest, wooded swamp, fresh water marshes, ponds, and large impoundments. Many of the marshes are located in and around islands within Back Bay. The Refuge is an important location for migratory bird species on the mainstream of the Atlantic Flyway.

False Cape State Park was established in 1980 and is part of the Virginia State Park System. It has 9.5 km (5.9 miles) of beach front and contains 1,750 hectares (4,321 acres) of beach, sand dunes, maritime forest and marshes. It abuts Back Bay NWR to the north, the North Carolina border to the south and Back Bay to the west. False Cape earned its name due to its resemblance to Cape Henry, when seen from the ocean. The real Cape Henry is located 32.2 km (20 miles) to the north, at the entrance to the mouth of Chesapeake Bay. As many as 300 residents occupied the area within False Cape known as Wash Woods from the 1880s-1920s. Hurricanes prompted most of the population to leave by the end of the 1930s. Remnants of the previous human civilization are still visible within some sections of the park.

The Virginia Herpetological Society (VHS) chose Back Bay NWR and False Cape State Park for its spring survey because these areas had not been surveyed by the VHS for more than 20 years and they are near the northern national limit of the range of several reptile and amphibian species. We had approximately 42 volunteers participate in the survey on Saturday 04 May 2013 from 9:00 to 16:00h and were organized into seven groups to survey four zones within Back Bay NWR (Refuge) and three zones within False Cape State Park (Park). Turtle traps were pulled from several impoundments from 16:00 to 18:00h and 3 volunteers returned to the boardwalk area of Back Bay NWR after nightfall on Saturday to identify frog calls. Twenty four volunteers returned to survey four zones on Sunday. Four groups, comprised of 21 volunteers, participated from 08:30 to 12:30h and one group of 3 volunteers surveyed from 11:30 to 16:00h. Turtle Traps were pulled from E-Pool prior to the start of the Sunday surveys. Three of the zones surveyed on Sunday were also previously surveyed on Saturday and one zone (Black Gut-north of Sandbridge Road) was added.

Survey Sites

The following are general descriptions of the survey sites. Coordinates were either taken from the published maps for the Refuge or the Park or were specific GPS coordinates taken by the

group leaders. Due to weather and time constraints most of the sand dunes and beach areas within many of the zones were not surveyed.

Zone 1-Refuge-Long Island (N36° 39.654, W -75° 55.888)
This area is within Back Bay and is comprised of some dry woods on the eastern side of the island, freshwater marshes along the shore as well as some sandy spots. It was accessible by canoe and kayak.

Zone 2-Refuge-Visitor Contact Station (N36° 40.321, W-75° 54.942)
This area includes the boardwalk trail near the Visitor Contact Station, the marsh area along Back Bay and the bone yard/storage dump.

Zone 3-Refuge- C, G-Pools & C Storage Pool and surrounding areas (N36° 38.757, W-75° 54.717)
This area includes impoundments, freshwater marshes and maritime forest. Marshy areas contained reeds, cattails, greenbrier, blackberries and poison ivy. The maritime forest contained live oak, sweet gum, wax myrtle and loblolly pines.

Zone 4-Refuge/Park - A, B, H, J-Pools & B Storage Pool (N36° 37.837, W-75° 54.251)
This area includes impoundments, freshwater marshes and maritime forest. The forest contained many vernal pools.

Zone 5-Park-Barbour Hill/Sandy Point (N 36° 37.260, W-75° 54.019)
This area included maritime forest with vernal pools near the Barbour Hill and the Sand Ridge Trails and marshy areas near the South Inlet and Marsh Ridge Trail and the impoundments near Sandy Point and Teal Overlook.

Zone 6-Park-False Cape Landing (N 36° 35.799, W-75° 53.212)
This area included maritime forest near the Maple Leaf and Sand Ridge Trails and marshes along Tripps and Hammet Coves.

Zone 7- Park-Wash Woods/Dudley Island Loop Trail (N 36° 34.665, W-75° 53.351)
This area included the maritime forest and marshes near the Cemetery Trail, the southern portion of the Sand Ridge Trail, the Wash Woods Church Site and the Dudley Island Loop Trail.

Zone 8-Refuge-Sanbridge Road North/Black Gut (N36° 44.711, W-75° 57.259)
This area is heavily wooded with increasing marshes moving north toward Black Gut. Water depth in the marsh ranged from 15 to 30 cm (6 to 12 inches).

Materials and Methods

Turtle Traps, each baited with sardines, were positioned in C-Pool and C&B Storage Pools in the Refuge in the late afternoon of Friday 03 May 2013.

About 42 volunteers participated in the survey for approximately seven hours (from 09:00 to 16:00h) in the field on Saturday 04 May 2013 for a total of about 294 man hours. Due to the large acreage and diverse habitat to be surveyed, seven groups were organized to survey seven zones within the Refuge and Park (Zones 1 through 7 as described above). Manpower and man hours for each of the survey groups, is contained in Table 1 (Groups # 1-7). Weather conditions were unfavorable for most of the day with rain, wind and drizzle in the morning hours followed by partly sunny but windy conditions in the afternoon. The US Government National Oceanic and Atmospheric (NOAA) weather station located in Virginia Beach recorded a temperature range of 11°C (51.8°F) to 15°C (59.0°F) during the hours of the survey with the high temperature occurring around 14:00h.

Survey participants used multiple collecting methods to find amphibians and reptiles, including visual observation, listening for calling anurans, hand capture, over-turning objects with snake hooks and field sticks. All captured animals were observed to identify possible malformations, injuries or disease and other unique markings and characteristics, and released at the point of capture. Digital photos were taken of many of the captured animals and GPS coordinates of the locations for several specimens were recorded. Survey group leaders summarized and submitted all relevant data on VHS survey group data sheets.

The turtle traps positioned in C- Pool, B Storage Pool and C Storage Pool were inspected by two volunteers between 16:00 -18:00h. Several other survey participants helped to photograph and document the turtles that were captured. The traps were removed and several were re-baited with sardines and positioned within E-Pool.

Three volunteers returned to the Boardwalk/Visitor Contact Station area within the Refuge after nightfall to listen for calling anurans.

Twenty four volunteers participated in the survey on Sunday 05 May 2013. Prior to the start, turtle traps positioned within E- Pool were inspected. Several survey participants helped to photograph and document the turtles that were captured. Twenty one volunteers were organized into four groups for the morning survey (8:30-12:30h). Group 8 surveyed Zone 8 within the Refuge north of Sandbridge Road, approaching Black Gut, while Group 9 re-surveyed Zone 2 the Boardwalk/Visitor Contact Station area. Zone 7, the Dudley Island Loop and Zone 5, Teal Overlook/Sandy Point area within the Park were surveyed again by Groups 10 and 11. Weather conditions remained cool and windy for the morning sessions with occasional sunshine. The NOAA weather station located in Virginia Beach recorded a temperature range of 12.2°C (54°F) to 15°C (59°F) over the period 09:00 to 13:00h on Sunday 05 May. However, Group 8 recorded a high temperature of 17.2°C (63°F) near Black Gut.

Group 12 also surveyed Zone 2 within the Refuge but in the afternoon from 11:30 to 16:00h. Weather conditions remained cool, partly cloudy and windy. NOAA temperature records from Virginia Beach ranged from 13.3°C (56°F) to 15°C (59°F) during this time period.

All Sunday survey groups continued to use visual observation, listening for calling anurans, hand capture and using snake hooks and field sticks to overturn objects. All captured animals

were again observed for any malformations, diseases, unusual markings or characteristics and released at the point of capture. Digital photos were taken of some of the captured animals and GPS coordinates were taken for some of the locations. Survey group leaders summarized and submitted all relevant data on VHS survey group data sheets.

Table 1 Summary of manpower deployment.

Refuge Group#	**Survey/Zone**	**Number**	**Man Hrs**
1	Long Island	5	**35**
2	Boardwalk/Visitor Contact Station	10	**70**
3	C, G-Pools C Storage Pool	6	**42**
4	A, B, H, & J-Pools B Storage Pool	4	**28**
Turtle Traps	C-Pool, C & B Storage Pools	2	**4**
Night Time Turtle Traps	Boardwalk/Visitor Contact Station E-Pool	3 2	**6** **2**
8	Sandbridge Rd.-North/Black Gut	7	**21**
9	Boardwalk/Visitor Contact Station	6	**18**
12	Boardwalk/Visitor Contact Station	3	**12**
Total		48	**238**
Park Group#	**Survey/Zone**	**Number**	**Man Hrs**
5	Barbour Hill/Sandy Point	6	**42**
6	False Cape Landing	7	**49**
7	Wash Woods/Dudley Island Loop	9	**63**
10	Wash Woods/Dudley Island Loop	5	**15**
11	Teal Overlook/Sandy Point	3	**12**
Total		30	**181**

Results

During the survey a total of 25 species were captured or positively identified, including 16 from the Class Reptilia and 9 from the Class Amphibia. The survey produced a total of 9 frog, 3 lizard, 8 snake and 5 turtle species. In addition some slider turtle intergrades were also captured and identified. No salamanders were observed in either the Refuge or the Park. A total of 200 animals were positively identified, 140 in the Refuge and 60 within the Park. No new Virginia Beach records were documented. Frogs were the most prominent animals captured or observed with 96 animals positively identified. Snakes were the most prominent reptiles with 59 animals positively identified. Table 2 summarizes the results for the Refuge and the Park. There may be some redundancy in reporting for Zone 2 in the Refuge (Boardwalk/Visitor Contact Station) as this zone was surveyed by three different daytime groups. Group 2 surveyed this zone for seven hours on Saturday. Group 9 surveyed this zone from 8:30 to 12:30h and Group 12 from 11:30 to

16:00h on Sunday. In addition the area was visited by three volunteers on Saturday after nightfall to listen for calling anurans.

Table 2. Summary of Reptiles and Amphibians observed at 8 localities in Back Bay National Wildlife Refuge and False Cape State Park. Zones 1-4 and 8 were in the Refuge, 5-7 were in the Park.

Zone	**1**	**2**	**3**	**4**	**8**	**5**	**6**	**7**	Total
Reptiles									
Agkistrodon p. piscivorus	4	7	3	2	2	1		1	20
Coluber c. constrictor	1	8	2			6		4	21
Farancia e. eryytrogramma								1	1
Nerodia e. erythrogaster					1				1
Nerodia s. sipedon				1	1	1			3
Nerodia taxispilota		5				3		2	10
Pantherophis alleghaniensis		1							1
Thamnophis s. sauritus						1			1
Chelydra s. serpentina				1		5			6
Chrysemys p. picta		1							1
Clemmys guttata					1				1
Pseudemys rubriventris	3								3
Trachemys s. scripta		10	5		1	7		2	25
Trachemys scripta x elegans intergrades		3							3
Aspidoscelis s. sexlineata		2							2
Plestiodon inexpectatus					1				1
Scincella lateralis		3			1				4
Total Reptiles	8	40	10	4	8	24	0	10	104
Amphibians									
Anaxyrus fowleri	1	4		1		1		3	10
Anaxyrus terrestris	2	9	1				1	1	14
Gastrophryne carolinensis	3	3							6
Hyla cinerea	5	2	13					3	23
Hyla squirella				1				1	2
Lithobates catesbeianus		14	1					2	17
Lithobates c. clamitans					2				2
Lithobates spenocephalus		4	4			6	1	6	21
Pseudacris crucifer						1			1
Total Amphibians	11	36	19	2	2	8	2	16	96
Grand Totals	19	76	29	6	10	32	2	26	200

Annotated Check List-Refuge Reptiles

1. Agkistrodon piscivorus piscivorus (Eastern Cottonmouth) Eighteen Eastern Cottonmouths were positively identified during the survey. Four adults were observed on Long Island basking in the cattails. One of these appeared to be unhealthy with an enlarged left eye (N36° 39.542, W-75° 55.884) and was photographed (VHS Archive #268). Seven were observed in the vicinity of the Boardwalk and Visitor Contact Station. Among these 1 adult was observed swimming in the ditch alongside Sandpiper Road and another adult was observed swimming in Back Bay. Three juveniles were observed basking on stumps/reeds next to D-Pool. One adult was dead off the boardwalk trail (N36° 40.122, W-75° 55.154) and 1 adult was basking and gaping on the boardwalk and was photographed. A juvenile with a yellow tail was observed in a marsh area near the end of C Storage pool. Two other yellow-tailed juveniles were observed basking on a tree branch between A&B- Pools. Two adults were observed coiled, one on top of the other, in dormant vegetation within C- Pool and were photographed. Two juveniles were observed in the marsh area approaching Black Gut, coiled and resting.

2. Coluber constrictor constrictor (Northern Black Racer) Eleven Northern Black Racers were positively identified during the survey. One juvenile was observed on Long Island crawling in a forest clearing. Three adults, including one with a truncated tail, were found together on Saturday under a sign board (these were photographed) and another 2 adults were observed fleeing on Sunday from under a tipped board, all in the storage dump/trash pile near the Visitor Contact Station. Another adult was observed basking about 30 minutes after the sun appeared on the edge of a nearby wooded area. Two adults were observed basking in the reeds along the Bay Trail, one of these had some visible lesions. One adult was observed basking near the pump house near a Back Bay cove. One adult was found basking atop a small sandy hill along East Dike and was actively striking and photographed while holding its ground (N36° 39.808, W-75° 54.635). This specimen appeared to be healthy.

3. Nerodia erythrogaster erythrogaster (Plain-bellied Watersnake) One adult female Plain-bellied Watersnake was found basking and hand captured alongside the ditch on the north side of Sandbridge Road. This specimen had some scale rot and skin bumps and was photographed (N36° 44.711, W-75° 57.259).

4. Nerodia sipedon sipedon (Northern Watersnake) One healthy juvenile Northern Watersnake was found under artificial cover next to the intersection of B&H-Pools. One adult Northern Watersnake was observed basking on tree roots in the wooded marsh north of Sandbridge Road, approaching Black Gut.

5. Nerodia taxispilota (Brown Watersnake) Five Brown Watersnakes were positively identified in the vicinity of the Boardwalk/Visitor Contact Station. One adult and two sub-adult Brown Watersnakes were observed basking in and on rocks along Back Bay shoreline near the Visitor Contact Station. One adult Brown Watersnake was found dead beside the Boardwalk behind the Visitor Contact Station and one adult was observed crossing the road near the fishing pier.

6. *Pantherophis alleghaniensis* (Eastern Ratsnake) One adult Eastern Ratsnake was observed basking in the reeds at the edge of D-Pool. It was hand captured, and struck when handled and photographed. This specimen was healthy.

7. *Chelydra Serpentina* (Eastern Snapping Turtle) One adult Eastern Snapping Turtle was pulled from a turtle trap positioned in B Storage Pool (N36° 38.762, W-75° 54.537). This specimen was healthy but had two leeches attached.

8. *Chrysemys picta* (Painted Turtle) One adult Painted Turtle was observed and photographed (VHS Archive #271) in the pond near the Visitor Contact Station when the turtle traps were being positioned.

9. *Clemmys guttata* (Spotted Turtle) One adult Spotted Turtle was found dead on Sandbridge Road.

10. *Pseudemys rubriventris* (Northern Red-bellied Cooter) Three adult Northern Red-bellied Cooters were observed floating at the water surface in the pond near the Visitor Contact Station.

11. *Trachemys scripta scripta* (Yellow-bellied Slider) Sixteen Yellow-bellied Sliders and three Slider Intergrades were positively identified. Two adult Yellow-bellied Sliders were observed basking across the ditch alongside Sandpiper Road near the Visitor Contact Station and one neonate was found dead on Sandpiper Road. Three male and one female adult Yellow-bellied Sliders were pulled from turtle traps positioned within C-Pool (N36° 39.696, W-75° 54.947) and one adult female was removed from a trap in C Storage pool (N36° 38.938, W-75° 54325). Each of the five Yellow-bellied Sliders were healthy specimens. Seven Yellow-bellied Sliders and 3 Slider Intergrades were removed from turtle traps positioned in E-Pool on Sunday morning prior to the start of the Sunday surveys. One of the Yellow-bellied Sliders had a deformed plastron and carapace and was removed from the Refuge for radiographs but there was no final conclusion on the cause of the deformation (VHS Archive #266). The deformed turtle was returned and released at E-Pool at about 16:15h. The other 9 specimens were all healthy adults, 6 females and 3 males, and were photographed then released (VHS Archive #269). The Intergrades were identified via photographic review after the survey and the sex distribution among the Yellow-bellied Sliders and the Slider Intergrades was not determined. One neonate Yellow-bellied Slider was found dead on Sandbridge Road.

12. *Aspidoscelis sexlineata* (Six-lined Racerunner) Two adult Six-lined Racerunners were observed hiding in vegetation and quickly fleeing in a maritime forest/dune edge habitat in the storage dump area near the Visitor Contact Station.

13. *Plestiodon inexpectatus* (Southeastern Five-lined Skink) One juvenile Southeastern Five-lined Skink was captured under the bark of a fallen log in the woods north of Sandbridge Road. The Skink had small tail scales and some mites.

14. *Scincella lateralis* (Little Brown Skink) Three adult Little Brown Skinks were captured in the storage dump near the Visitor Contact Station. One was under a board, two were in a trash

pile and all were healthy. One adult Little Brown Skink was captured behind the bark of a dead tree limb and had a truncated tail.

Annotated Checklist-Refuge Amphibians

1. *Anaxyrus fowleri* (Fowler's Toad) One healthy juvenile Fowler's Toad was found on the ground in a forest clearing on Long Island. Two healthy adult Fowler's Toads were captured in the grass at the storage dump. Two other healthy adults were captured next to the pond near the Visitor Contact Station. One healthy juvenile Fowler's Toad was captured in a sandy and wet area on the dyke near H-Pool.

2. *Anaxyrus terrestris* (Southern Toad) Two healthy juvenile Southern Toads were captured in a forest clearing on Long Island. Six dark colored but healthy juvenile and sub-adult Southern Toads and three healthy adults were captured under boards, tires and tin in the storage dump near the Visitor Contact Station (N36° 39.836, W-75° 54.699). One healthy sub-adult was captured while resting under a log in the maritime forest near C-Pool.

3. *Gastrophryne carolinensis* (Eastern Narrow-mouthed Toad) Three healthy juvenile Eastern Narrow-mouthed Toads were founder logs and bark in a wooded section of Long Island (N36° 39.654, W-75° 55.888). Two juvenile and one adult Narrow-mouthed Toads were captured under debris in the storage dump near the Visitor Contact Station. One juvenile appeared to have injuries near its mouth while the other juvenile and the adult were healthy.

4. *Hyla cinerea* (Green Treefrog) Five healthy juvenile and sub-adult Green Treefrogs were captured under bark in a wooded section of Long Island (N36° 39.654, W-75° 55.888). One adult green tree frog was observed sitting at the bottom of the boardwalk and one juvenile was on a board near the Visitor Contact Station. Nine Green Treefrogs, 7 sub-adults and 2 adults, were observed within grasses, reeds, shrubs and trees in marsh areas near Back Bay (36° 38.603, W-75° 55.004). One adult Green Treefrog was observed sitting on poison ivy in the maritime forest (N36° 38.739, W-75° 54.765) but jumped away. Three adult Green Treefrogs were observed resting on reeds and grasses at the edge of a Back Bay cove (N36° 38.895, W-75° 54.740).

5. *Hyla squirella* (Squirrel Treefrog) One adult Squirell Treefrog was observed and photographed attached to reeds in a scrub/dune environment on the dyke near H-Pool.

6. *Lithobates catesbeianus* (American Bullfrog) Four healthy adult American Bullfrogs were observed in the vicinity of the Visitor Contact Station. One was located in the pond in front of the bird watch, another was seen in the pond north of the bird watch and two were observed in the pond along the Bay Trail. The night time group identified the calls of 10 American Bullfrogs. Three of these were located near the Visitor Contact Station. There may be some redundancy between American Bullfrogs seen during the day and heard at night near the Visitor Contact Station. Seven American Bullfrogs were heard by the night time group from the ditch/canal alongside Sandpiper Road. One sub-adult American Bullfrog was observed in the marsh near the maritime forest close to the Back Bay (N36° 38.605, W-75° 54.903).

7. *Lithobates clamitans melanota* (Northern Green Frog) One healthy adult and one healthy juvenile Northern Green Frog were captured from within the ditch on the north side of Sandbridge Road.

8. *Lithobates sphenocephalus* (Southern Leopard Frog) Four adult Southern Leopard frogs were observed in the vicinity of the Visitor Contact Station. One adult was in the pond by the bird watch (N36° 39.646, W-75° 54.903). A second adult was observed alongside the boardwalk. Two juveniles were observed in the ditch on the ocean side of Sandpiper Road. Four adult Southern Leopard Frogs were observed in the marsh near the maritime forest close to Back Bay (N36° 38.605, W-75° 54.903).

Annotated Checklist-Park Reptiles

1. Agkistrodon piscivorus piscivorus (Eastern Cottonmouth) One adult Eastern Cottonmouth was observed and photographed basking on branches in the marsh alongside Marsh Ridge Trail. One juvenile Eastern Cottonmouth was observed basking on a board by the old house in the Wash Woods section. (N36° 38.245, W-75° 54.755).

2. *Coluber constrictor constrictor* (Northern Black Racer) Ten Northern Black Racers were either observed or captured during the survey. Two Northern Black Racers were observed mating on a rocky embankment in the area of Sandy Point. As they fled together, they continued their mating efforts. Another Northern Black Racer was within a few meters on the same rock embankment, possibly a second male in pursuit of the female. One healthy male Northern Black Racer was captured by hand attempting to flee in a grassy area near Widgeon Overlook. A photograph was taken of this specimen. One Northern Black Racer, in ill health, was observed moving near the Church Steeple area (N36° 33.647, W-75° 52.673). There was obvious injury to its face and the snake was shedding. This specimen was photographed (VHS Archive #265). One adult Northern Black Racer was seen basking in the sun on Dudley Island Loop Trail (N36° 33.427, W-75° 52.723) and one adult was observed basking on the Church Trail (N36° 34.595, W-75° 53.063). One adult was observed on lower tree branches near a Back Bay inlet. One adult Northern Black Racer was observed at Teal Point where the water drains under the road (N36° 37.733, W-75° 54.413) and one adult Northern Black racer was observed with its head sticking out from a rock which it quickly withdrew as it was approached (N36° 37.615, W-75° 54.323).

3. *Farancia erytrogramma erytrogramma* (Common Rainbow Snake) One healthy but shedding adult Common Rainbow Snake was captured while active in the vicinity of the muddy and rocky shore by the boat ramp and near the maintenance shed. (N36° 34.803, W-75° 53.405). A photograph was taken of this specimen.

4. *Nerodia sipedon sipedon* (Northern Watersnake) One healthy female adult Northern Watersnake was photographed imbedded in a rock pile near the boat ramp. This Specimen was captured, had an overall length of 91 cm (36 inches) and was photographed.

5. *Nerodia taxispilota* (Brown Watersnake) Five Brown Watersnakes were positively

identified during the survey. Three adult Brown Watersnakes were observed basking on the rock embankment just beyond and on the same side as Swan Overlook near Sandy Point (N36° 62.829, W-75° 54.807). All had either injuries or health issues. The smallest adult had an enlarged head and facial scale rot (VHS Archive #267). The two larger adults had body lesions 3-4 cm long. Photographs were taken. Two adult Brown Watersnakes were observed, captured and photographed at the muddy, rocky shore near the boat ramp (N36° 34.803, W-75° 53.405).

6. *Thamnophis sauritus sauritus* (Common Ribbon Snake) One adult Common Ribbon Snake was observed basking on branches above the marsh adjacent to Marsh Ridge Trail. The Common Ribbon Snake quickly fled into the water when approached.

7. *Chelydra Serpentina* (Eastern Snapping Turtle) Five adult Eastern Snapping Turtles were observed from Teal Point due to low water levels where the wind had pushed the water out (N36° 37.770, W-75° 54.448).

8. *Trachemys scripta scripta* (Yellow-bellied Slider) Nine Yellow-bellied Sliders were positively identified during the survey. However, several of these were remnants of deceased turtles. One deceased juvenile was located at the entrance to the Park. Two adult shells were found near the Church Steeple (N36° 33.847, W-75° 52.730 and N36° 33.308, W-75° 52.673) and one adult shell was found near Teal Overlook. Five adult Yellow-bellied Sliders were observed basking at Teal Overlook and Sandy Point.

Annotated Check List-Park Amphibians

1. *Anaxyrus fowleri* (Fowler's Toad) One adult Fowler's Toad was observed actively moving on the forest floor within the Greenhill Maritime Forest (N36° 38.138, W-75° 54.489). Three adult Fowler's Toads were observed near the Dudley Island Loop Trail at the edge of the woods and a field (N36° 33.300, W-75°). Each exhibited normal behavior.

2. *Anaxyrus terrestris* (Southern Toad) One adult Southern Toad was observed at the base of a pine tree near the False Cape Landing Trail (N36° 35.792, W-75° 53.009). One adult Southern Toad was observed in open field near the Dudley Island Loop Trail.

3. *Hyla Cinerea* (Green Treefrog) Two juvenile Green Treefrogs were observed near the Dudley Island Loop Trail. One was under bark (N36° 38.247, W-75° 54.755) and the other was observed in tall grass in a swampy area. One adult was observed along the same trail within a marsh near a forest edge (N36° 33.300, W-75° 52.870).

4. *Hyla Squirella* (Squirrel Treefrog) One adult Squirrel Treefrog was observed under the bark of a pine tree near Teal Overlook (N36° 37.477, W-75° 54.353).

5. *Lithobates catesbeianus* (American Bullfrog) One adult American Bullfrog was in the water at a Back Bay inlet near the Dudley Island Loop Trail (N36° 33.282, W-75° 52.891). One adult was observed in the impoundment near Teal Overlook (N36° 37.955, W-75° 54.428).

6. *Lithobates sphenocephalus* (Southern Leopard Frog) A total of 13 Southern Leopard Frogs were positively identified during the survey. Six juvenile and sub-adult Southern Leopard Frogs were observed in wetland and vernal pools in the Greenhill Maritime Forest (N36° 38.138, W-75° 54.489). One adult Leopard frog was observed in a marsh near False Cape Landing Trail (N36° 35.637, W-75° 53.262). Two adults, including a very large bright green specimen, were observed along Sand Ridge Trail near the electric line (N36° 39.737, W-75° 53.013). Three adult Southern Leopard Frogs were observed in a small pool near Teal Overlook (N36° 37.733, W-75° 534.413). One adult Southern Leopard Frog was observed at the end of an impoundment near Sandy Point.

7. *Pseudacris crucifer* (Spring Peeper) One juvenile Spring Peeper was captured by the roadside brook not far from the Visitor Center. This frog was photographed (VHS Archive #270).

Discussion

During the two day survey of the Back Bay National Wildlife Refuge and False Cape State Park, the VHS survey positively identified 200 specimens representing 25 species (see Table 2). There were 16 species of reptiles (8 snakes, 5 turtles and 3 lizards) and 9 species of amphibians, all of which were anurans. No salamanders were observed. All of the species identified had previously been documented for Virginia Beach.

Weather conditions over the 3-5 May 2013 weekend were at times rainy and overcast with occasional periods of sunshine. The highest air temperatures recorded by NOAA in Virginia Beach were 15°C (59°F) for both survey days. VHS survey group 8 recorded a high temperature of 17.2°C (63°F) for Zone 8 (Sandbridge Road North/Black Gut) on 5 May. The low weekend temperatures made the search for reptiles and amphibians more challenging.

Fifty-nine snakes representing 8 species were documented. A few additional snakes were encountered but fled prior to proper identification. A total of 20 *Agkistrodon piscivorus piscivorus* (Eastern Cottonmouths), or almost 34% of all snakes identified, were observed in all but one of the zones surveyed (not seen in Zone 6-False Cape Landing). This is a high ratio of venomous to non-venomous snakes. Twenty-one *Coluber constrictor constrictor* (Northern Black Racers), or almost 36% of all snakes identified, were present in 6 of 8 survey zones (not observed in Zones 6 or 8). Ten *Nerodia taxispilota* (Brown Waternakes) were identified within Zones 2 (Boardwalk/Visitor Contact Station), 5 (Barbour Hill/Sandy Point) and 7 (Wash Woods/Dudley Is. Loop). Three *Nerodia sipedon sipedon* (Northern Watersnakes) were observed in Zones 4 (A, B, H & J pools), 5 and 8 (Sandbridge North/Black Gut). One positive identification of *Farancia ertyrogramma ertyrogramma*(Common Raindow Snake), *Nerodia erythrogaster erythrogaster* (Red-bellied Watersnake), *Pantherophis alleghaniensis* (Eastern Ratsnake) and *Thamnophis sauritus sauritus* (Common Ribbon Snake) were made in Zones 7, 8, 2 (Boardwalk/Visitor Contact Station) and 5 respectively.

No small snake species were encountered. Several snake species previously documented for the Refuge and the Park (Pague and Mitchell, 1981, Williamson and Roble, 1999) were not observed during the survey including: *Farancia abacura abacura* (Eastern Mudsnake), *Heterodon*

platyrhinos (Eastern Hognose Snake), *Lampropeltis getulus getulus* (Eastern Kingsnake), *Opheodrys aestivus* (Rough Greensnake) and *Storeria dekayi dekayi* (Northern Brownsnake).

Three snakes were observed to be in poor health. One specimen of *Agkistrodon piscovorus piscovorus, Coluber constrictor constrictor and Nerodia taxispilota* had a visual appearance that could either be indicative of Snake Fungal Disease (SFD) or scale rot due to emergence from hibernacula. Photographs and GPS coordinates for each of these specimens were taken and forwarded to Refuge and Park personnel.

The National Wildlife Health Center (NWHC) of the U. S. Geological Survey (USGS) have identified SFD as *Ophidiomyces ophiodiicola*. NWHC reports that SFD has been documented in at least 7 species of snakes in at least 9 eastern and mid-west states. It has not yet been documented in Virginia. It has been documented for *Coluber constrictor constrictor* but not yet for *Agkistrodon piscovorus piscovorus* or *Nerodia taxispilota*. NWHC states "The most consistent clinical signs of SFD include scabs or crusty scales, premature separation of the outermost layer of the skin from the underlying skin, white opaque cloudiness of the eyes (not associated with molting), or localized thickening or crusting of the skin (hyperkeratosis), skin ulcers, swelling of the face, and modules in deeper tissues of the head have also been documented". Each of the snakes identified above exhibited at least some of those potential signs. Snake populations within the Refuge and the Park should be monitored in the future for the potential presence of SFD.

Thirty nine turtles representing five species were documented. At least three of the 39 were believed to be Slider turtle intergrades. Many more turtles were observed basking near the Back Bay or within impoundments at a distance that did not permit positive identification. Twenty-five *Trachemys scripta scripta* (Yellow-bellied Slider) were positively identified. Five of these were found deceased primarily within the Park and 12 were retrieved from traps positioned within C-Pool, C Storage Pool, and E- Pool. One adult Yellow-bellied Slider retrieved from E-Pool had a deformed shell. This specimen was removed from the Refuge for several hours and radiographs were taken. There was no final conclusion on the cause of the deformation and the turtle was returned and released in E-Pool. Six *Chelydra serpentine* (Eastern Snapping Turtles) were positively identified. Five were observed in the mud and shallow water within Zone 5 near Teal Overlook and one healthy adult was retrieved from a trap positioned in B Storage Pool. Three *Pseudemys rubriventris* (Northern Red-bellied Cooters) were observed in Zone 2 floating in the pond near the Visitor Contact Station. One adult *Chrysemys picta picta* (Painted Turtle) was observed and photographed when turtle traps were positioned in the pond near the Visitor Contact Station. One *Clemmys guttata* (Spotted Turtle) was found dead on Sandbridge Road within Zone 8. This was one of the most interesting turtle observations of the survey. *Clemmys guttata* have a Virginia Wildlife Action Pan Rating of Tier III-High Conservation Need. By definition Tier III means: Extinction or extirpation is possible. Populations of this species are in decline or have declined to low levels, or are in a restricted range. Management action is needed to stabilize or increase populations. The area within the Refuge north and south of Sandbridge Road should be closely monitored for *Clemmys guttata.*

All of the turtle species that were positively identified, except *Clemmys gutatta* were previously documented in the Refuge and the Park (Pague and Mitchell 1981). Pague and Mitchell updated

their census in a 1991 report (The Amphibians and Reptiles of Back Bay, Virginia Pp. 159-166 *in* H.G. Marshall and M. D. Norman (eds.). Proceedings of the Back Bay Ecological Symposium Old Dominion University, Norfolk, Virginia) However, this report can only be accessed at the Old Dominion University Library.

Turtle species previously documented that were not observed during the survey include: *Kinosternon subrubrum subrubrum* (Eastern Mud Turtle) and *Terrapene carolina carolina* (Eastern Box Turtle).

Seven lizards representing three lizard species were positively identified during the survey. All of the identified lizards were either in Zone 2 or 8 within the Refuge. There were no lizards observed within the Park. Two *Aspidoscelis sexlineata* (Six-lined Racerunnesr) and three *Scincella lateralis* (Little Brown Skinks) were observed in the Storage Dump area of Zone 2. The Racerunners were observed fleeing in a sand dune/maritime forest edge and the skinks were captured under debris. One skink was captured under the bark of a dead tree limb in Zone 8. One *Plestiodon inexpectatus*(Southeastern Five-lined Skink) was captured under the bark of a fallen log in Zone 8.

Neither *Scinella lateralis* nor *Plestiodon inexpectatus* were documented in the 1980-81 surveys by Pague and Mitchell, although their 1991 updated census might include these species. *Ophisaurus ventralis* (Eastern Glass Lizard) which has been previously documented within the Refuge and the Park was not observed during this survey.

A total of 96 amphibians representing 9 species were positively identified during the survey. All of the amphibians were anurans and no salamanders were observed. Salamanders were also not observed in the 1980-81 surveys by Pague and Mitchell. Ten *Anaxyrus fowleri* (Fowler's Toad) were positively identified within five survey zones with most of the observations occurring in Zones 2 and 7. Fourteen *Anaxyrus terrestis* (Southern Toads) were also observed in five survey zones but with the majority of observations occurring within Zone 2. Six *Gastrophryne carolinensis* (Eastern Narrow-mouthed Toads) were documented within the Refuge survey Zones 1 & 2 but none were seen within the Park. Twenty-three *Hyla cinerea* (Green Treefrog) were documented in five survey zones with the highest concentration within Zone 3. Two *Hyla squirella* (Squirrel Treefrogs) were positively identified in forested and dune areas of Zones 4 and 5. Seventeen *Lithobates catesbeianus* (American Bullfrogs) were identified in four survey zones. Fourteen of these were located in Zone 2 and 10 were identified through calls after sunset. Two *Lithobates clamitans melanota* (Northern Green Frog) were positively identified within Zone 8 but were not observed elsewhere. Twenty-one *Lithobates sphenocephalus* (Southern Leopard Frogs) were observed in five survey zones with the highest number of documented sightings occurring in Zone 5. One *Pseudacris crucifer* (Spring Peeper) was captured and photographed in Zone 5.

Warmer conditions would have certainly produced higher specimen counts and most likely additional species observations throughout the Refuge and the Park. The least amount of time was spent surveying Zone 8 (21 man-hours). However, the habitat within Zone 8 is different than the other areas and four species were documented there that were not observed

in any of the other survey zones (*Clemmys guttata, Lithobates clamitans melanota, Nerodia erythrogaster erythrogaster, Plestiodon inexpectatus*). *Pantherophis alleghaniensis* is one of the most frequently observed snakes in Virginia, but only one specimen was documented during the survey (Zone 2). Single species observations were also recorded in the Park within Zone 5 (*Pseudacris crucifer, Thamnophis sauritus sauritus)* and Zone 7 (*Farancia erytrogramma erytrogramma*).

Recommendations

A program to monitor the health of snake species within the Refuge and the Park should be implemented to determine if SFD is an issue.

The 2013 species count should be compared with the 1991 census update prepared by Pague and Mitchell and on file at the Old Dominion University library in Norfolk.

Another VHS survey should be conducted during warmer temperature conditions to contrast species observations and specimen counts with this survey.

The area within the Refuge that is north and south of Sandbridge Road should be monitored for populations of *Clemmys guttata.*

Acknowledgements

The VHS would like to provide a special thanks to Kyle Barbour and Doug Brewer for allowing the VHS to survey False Cape State Park and Back Bay NWR and to the Refuge and Park personnel who greatly assisted VHS in the preparation and execution of a successful survey including: David Bishop, John Gallegos, Gayle Green, Gabriel Harper, Krystal Krejcik, Erica Locher, Rebecca Martin, Geralyn Mireles, Erik Molleen, Kathryn Owens and Walter Tegge.

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Preliminary Estimation of Capture Rates for Red-Backed Salamanders at the Randolph-Macon College Environmental Field Station, Doswell, Virginia

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Introduction

As concerns for the conservation of amphibian species rise, there has been an increased effort on the part of biologists to develop methods to better monitor populations (Pounds et al. 2006, Adams et al. 2013). Rigorous monitoring methods are especially needed for salamander populations as information is lacking on the long-term population trends of these species (Hyde and Simons 2001, Bradford 2005). This lack of information is, in part, due to the difficulty of detecting salamanders in their habitats. Capture rates for salamanders can be expected to vary substantially across habitats and seasons (Bailey et al. 2004a). In light of this variability, there is value in determining important capture rate patterns for specific salamander populations that have potential for long-term monitoring in regions or habitats of interest.

Virginia represents a hotspot for salamander diversity (55 species: Mitchell and Reay 1999), so there is a particular need for more region-specific studies within the state assessing salamander life history and monitoring parameters, such as capture rates, particularly in the piedmont regions where fewer population studies have been conducted. Previous studies have focused on the red-backed salamander (Bailey et al. 2004b, Williams and Berkson 2004), which is common in much of the state, including the piedmont (Mitchell and Reay 1999). Bailey et al. (2004b) estimated detection probabilities for this species for populations within the Great Smoky Mountains National Park using model selection techniques with Program MARK (White and Burnham 1999), and were able to develop a credible model holding for approximately half their experimental units. Given this level of success, I wished to see if I could use their basic methodology for a study site in the York River watershed of Virginia. As a preliminary to developing models for estimation in MARK which require large amounts of data to estimate multiple survival, migration, and detection probabilities, I wished to determine whether certain basic aspects of the study design might affect naïve capture and recapture rates (average captures and recaptures across the study period).

Specifically, my objectives were to estimate initial capture and recapture rates of red-backed salamanders over an extended study period at the Randolph-Macon Environmental Field Station (EFS) in Hanover County, Virginia; and to determine whether certain age classes (adult *vs.* juvenile) tended to be captured at higher rates on upland or riparian areas. Secondarily, I wished to determine whether search techniques differed in their effectiveness in relation to upland and riparian sites.

Study Site

Fourteen of Virginia's salamander species (approximately 28% of Virginia's species) occur within the York River drainage (Mitchell and Reay 1999). The Randolph-Macon College Environmental Field Station (EFS) encompasses a small ridge located within this drainage, bordered by the Little River in Doswell, Virginia. Elevation ranges between 150 – 220 m. The

EFS is a 26.7 hectare (66 acres) property in northern Hanover County, Virginia, located about 5 kilometers from Ashland, Virginia (Randolph-Macon College 2010).

Methods

In the spring and summer of 2011, six 25m^2 silt fence enclosures were established at the EFS. Enclosure location was determined by placing a transect line at a random location perpendicular to the Little River on the south side of the property. This transect bifurcated the flat area next to the river (riparian zone) and a rise leading up to the ridge running roughly east-west along the property (upland zone). Three enclosures were placed in the riparian zone, and three enclosures were placed in the upland zone. Enclosures were offset from the initial transect by a random distance of 0 – 50m. If an enclosure occurred within 25m of another enclosure, a new location was determined for it. Silt fences were buried at least 15 cm deep to block movement of salamanders attempting to travel outside the enclosure.

Enclosures were sampled according to Pollock's Robust Design (1982), which has two levels of sampling, a primary sample composed of a short series of secondary samples. Primary samples may be separated by long time periods, but secondary samples must occur over a short enough timespan that the assumption of population closure holds. Primary samples were taken between 17 August – 4 December of 2011, 16 February – 23 May of 2012, 3 October – 6 December of 2012, and 26 February – 8 May 2013; and were separated by a 10-day period on average. They were comprised of 3 secondary samples that took place over a 3-4 day period.

Within enclosures, two types of searches were conducted for secondary samples: a natural cover search, where all cover objects were searched by looking under rocks and woody debris; and a leaf litter search, where five 1m^2 randomly placed quadrats were searched by carefully raking through leaf litter by hand in small parallel strips until all leaf litter had been removed from the quadrat (Hyde and Simons 2001, McGhee and Killian 2010). In fall, when leaf density was high, leaves were removed in smaller sections to increase the likelihood of finding individuals within the leaf layer itself rather than lying between the ground and the leaf layer. All leaf litter was replaced when searches were completed. Captured red-backed salamanders were anesthetized using a 1g/L of maximum strength Oragel® - water solution (Cecala et al. 2007), and measured for total length (TL) and snout-vent length (SVL) to determine age class (juvenile < 65 mm TL, adults >65 mm TL: Petranka 1998). They were then marked with a single fluorescent elastomer tag (Northwesy Marine Technology, Inc., Shaw Island, Washington, USA). Although other studies have used multiple tags per salamander to uniquely identify individuals (Davis and Ovaska 2001, Bailey et al. 2004a), many of salamanders captured in this study were juveniles, and were too small (<25 mm TL) to carry multiple tags. To ensure that individuals could be identified with a single tag, I used four colors (red, pink, orange, green), and varied the location at which tags were placed at one of four locations (at the base of each limb: Davis and Ovaska 2001, Heemeyer et al. 2007). The use of 4 colors and 4 limbs allowed for 16 unique identifiers per enclosure. In addition, the presence of the red dorsal stripe, common to red-backed salamanders (Petranka 1998), but which was absent in a portion of individuals was used in conjunction with elastomer tags as an identifier. When warranted for a particular enclosure,

however, captured individuals > 45 mm TL received injections at two limb locations. Alcohol was used to sterilize the needle between marking new individuals. Captured individuals were bathed in distilled water, given time to recover then released back into the enclosure.

I used mark and recapture data to determine naïve capture and recapture rates per enclosure. I compared average capture rates (captures/number of primary sampling periods) and recapture rates (recaptures/number of primary sampling periods-1) between riparian and upland sites using a t-test. I compared juvenile and adult captures in upland and riparian sites by ANOVA. I compared the effectiveness of natural cover searches and leaf litter searches between riparian and upland sites using a Pearson's χ^2-test. For all statistical tests, $\alpha = 0.05$.

Results

Between 17 August 2011 and 8 May 2013, I sampled 12 – 23 primary capture periods and 334 secondary capture periods for all 6 enclosures. One enclosure (Riparian 3) failed to produce any salamanders in the first year of the study, and so was not sampled in the second year. Similarly, the Upland 3 enclosure only produced one red-backed salamander in the first year, and was not sampled in the second. Twenty-one adults and 48 juvenile red-backed salamanders were captured during the study. Twenty-five percent of captures were unstriped morphs (Petranka 1998). Mean SVL for captured adults was 40.07 mm ± 1.13 SE, while mean SVL for juveniles was 23.87 mm ± 0.94 SE. Mean TL for captured adults was 79.00 mm ± 2.48 SE, while mean TL for juveniles was 39.23 mm ± 1.80 SE. Mean capture rates were 0.38 ± 0.09 SE, while mean recapture rates were 0.05 ± 0.02 SE (Table 1). Capture rates were greater than recapture rates ($t = 3.5585$, $df = 10$, $P = 0.0043$). Primary capture rates did not differ between upland and riparian enclosures ($t = 0.7273$, $df = 4$, $P = 0.2749$). Recapture rates also did not differ between upland and riparian enclosures ($t = 1.6029$, $df = 4$, $P = 0.1085$). There was no difference in the number of adults and juveniles in both upland and riparian enclosures ($F_{3,9} = 0.4912$, $P = 0.6321$). Natural cover searches resulted in more captures than leaf litter searches for both upland ($\chi^2 = 9.3077$, $df = 1$, $P = 0.0023$) and riparian ($\chi^2 = 6.7209$, $df = 1$, $P = 0.0095$) enclosures.

Discussion

Preliminary results indicate a trap-shy effect in red-backed salamanders, such that individuals are considerably less likely to be recaptured after their first capture. Bailey et al. (2004b) found a similar effect in their most commonly selected model for red-backed salamander populations in the Great Smoky Mountain National Park, USA. Both Bailey et al. (2004b) and I used fluorescent marking which requires significant handling time (Davis and Ovaska 2001). Because of the length of time required to handle these animals, this procedure may stress individuals resulting in migration to the lower soil layers or simply away from the natural cover object they had inhabited upon capture for an extended period.

I found more salamanders using natural cover searches rather than leaf litter searches within enclosures. Hyde and Simons (2001) had a similar result, reporting good capture success with low sampling variability compared to other methods. Natural cover searches are likely to be more effective than leaf litter searches for a variety of habitats, but sampling variability, though lower than for other capture methods, is still high (Hyde and Simons 2001). There is a need to determine what conditions affect natural cover search capture rates.

Location of enclosures (riparian vs. upland) appeared to have little effect on capture rates. These were generic categories, representing the combined effects of drainage, soil type, vegetation, and temperature, but are related at least in part to elevation as well. Bailey et al. (2004a) were able to detect an elevation effect on capture probabilities, but only between their mid and high-level categories, and these categories encompassed distances much greater than ours (330m vs. 22m). My riparian and upland sites may not have been different enough to produce a difference in capture rates. Similarly, neither age group was captured in greater numbers. These non-significant results may be a result of the generally low capture rates at the site.

My analysis assumes that capture and recapture rates for enclosures were constant, but this is unlikely to be the case. While Bailey et al. (2004b) did indeed find that their best model assumed constant rates of capture and recapture. This only held true for 54% of their experimental units. It's likely that these detection probabilities will, in most cases, differ according to important environmental and population level cues, such as region, season, precipitation frequency, soil moisture, vegetative cover, population density, prey density, or predation risk. As captures are likely to be low for most sites, making estimation of these critical probabilities difficult, I recommend a continued analysis of detection probabilities for red-backed salamanders in multiple regions.

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Table 1. The number of primary and secondary sampling periods conducted per enclosure with capture and recapture rates per transect. Data was collected between fall 2011 – spring 2013 at the RMC Environmental Field Station in Doswell, VA.

Location	Primary Sampling Periods	Secondary Sampling Periods	Capture Rate	Recapture Rate
Upland 1	23	69	0.55	0.14
Upland 2	23	66	0.55	0.05
Upland 3	12	34	0.25	0.09
Riparian 1	23	69	0.41	0.05
Riparian 2	22	63	0.52	0.00
Riparian 3	12	33	0.00	0.00

Field Notes

***Ambystoma maculatum* (Spotted Salamander)** VA: Orange County, near a seep near Mine Run (N38° 14.350 W77° 49.879) 2 April 2013. Les Kepplinger and Pam McMillie.

County Record: On 2 April 2013 Les Kepplinger was repairing damage to a landscaped pond when an adult Spotted Salamander was found under a rock. The salamander was brought to me where I photographed it (VHS Archive #257), then returned and released it at the original location. This represents a new record for Orange County (Mitchell, J.C. and K.K. Reay. 1999. Atlas of Amphibians and Reptiles in Virginia. Special Publication No. 1, Virginia Department of Game and Inland Fisheries, Richmond, Virginia. 122 pp.; and the VADGIF FWIS Database), although the Spotted Salamander has a state-wide distribution and has previously been vouchered from most of the surrounding counties.

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***Terrapene carolina* (Eastern Box Turtle)** VA: Orange County, 31130 Price Rd., Mine Run (N 38° 14.350, W 77° 49.879) 12 May 2013. Pam McMillie.

County Record: On 12 May 2013 an Eastern Box Turtle was found in tall grass in the yard at 31130 Price Rd., Mine Run. Although reported from most surrounding counties, there is no record for Orange County for this species (Mitchell, J.C. and K.K. Reay. 1999. Atlas of Amphibians and Reptiles in Virginia. Special Publication No. 1, Virginia Department of Game and Inland Fisheries, Richmond, Virginia. 122 pp. and the VADGIF FWIS Database). A digital photograph was deposited in the VHS Archive (#262) as a voucher.

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Mine Run, VA 22508

***Opheodrys aestivus* (Rough Green Snake)** VA: Orange County, 31130 Price Rd., Mine Run (N 38° 14.304, W 77° 49.720) 17 August 2013. Pam McMillie.

County Record: On 17 August 2013 a Rough Green Snake was photographed while crossing a sidewalk at 31130 Price Rd., Mine Run. Although reported from most surrounding counties, there is no record for Orange County for this species (Mitchell, J.C. and K.K. Reay. 1999. Atlas of Amphibians and Reptiles in Virginia. Special Publication No. 1, Virginia Department of Game and Inland Fisheries, Richmond, Virginia. 122 pp. and the VADGIF FWIS Database). A digital photograph was deposited in the VHS Archive (#263) as a voucher.

Pam McMillie
Old Rag Master Naturalist
31130 Price Rd.
Mine Run, VA 22508

Hemidactylium scutatum (Four-toed Salamander) VA: Lee County, Dry Creek Road and 377 Hasslenot Drive, Duffield, VA. 24244. (36.73627N,-82.896953W). 8 May 2013. Lisa Powers

County Record: A Four-toed salamander was found while road cruising after a light rain. The temperature was 16 ˚C and the time was 23:49h. It was located at the end of my parents' driveway. On the lower side of the road is a wet meadow filled with fescue (Festuca spp.), rushes (Juncus spp.) and sedges (Carex spp.). The open wet meadow which lies on the floor of a valley was formerly a mowed yard and was abandoned in 1982 and allowed to grow wild and naturally seeded with the rushes and sedges. It is fed by seeps from a dam and the overflow from the dam spillway. *Lobelia cardinalis* and *Lobelia siphilitica* bloom here later in the year. The soil of the meadow stays moist for most, if not all, of the year. The upper side of the road is a forested (deciduous) mountain with rhododendron and mountain laurel in the understory. Photos of the dorsum and venter were taken and deposited in the VHS Archive (#255). The animal was released on site where it was found.

Four-toed salamanders are not common in the very southwestern portion of Virginia. The only other record for the nine most southwestern counties is for eastern Scott County just south of Wise County. This record extends the Virginia distribution one more county to the west.

Lisa Powers, Herpetologist
Froghaven Farm
10471 Bekka Belle Circle
Bon Aqua, TN 37025

Pantherophis alleghaniensis (**Eastern Ratsnake**) VA: Giles Co., Newport (37° 18' 28.77"N 80° 28' 46.49"W, elevation = 621 m). 26 May 2013. David A. Steen.

Reproductive Behavior: Behavior associated with courtship and reproduction is relatively well-known in Eastern Ratsnakes, however these behaviors may vary widely among regions and be influenced by local environmental conditions. Therefore, a comprehensive understanding of this aspect of snake ecology relies on compiling a large database of observations of wild snakes engaging in reproductive behavior over a wide range of conditions. Yet it is unusual to encounter snakes courting or reproducing. At approximately 1300 h two Eastern Ratsnakes were observed on the ground engaged in courtship behavior. The snakes were not disturbed to confirm

intromission but behavior was consistent with the description of mating behavior described elsewhere (Ernst C.H. and E.M. Ernst 2003, Snakes of the United States and Canada. Smithsonian Books, 668 pp.), although no biting was observed. The mean, minimum, and maximum temperatures on this day were
13.3°C, 6.7°C, and 20°C, respectively. A short video of the animals is available at: http://www.youtube.com/watch?v=dF9bm_jVslU.

David A. Steen
Virginia Tech
Department of Fish and Wildlife Conservation
Blacksburg, VA 24061

***Pseudemys concinna* (Eastern River Cooter)** VA: Halifax County, approximately 1 km from the Roanoke/Staunton River and 300 meters from Buffalo and Cherry Creeks (N 37° 02' 08.9" W79° 03" 28.8") 12 June 2013. Catherine Waller.

County Record: On 12 June 2013 I found a large turtle in a wooded section of my yard in Northern Halifax County. My property is located approximately a kilometer from the Roanoke/Staunton River and 300 meters from Buffalo and Cherry Creeks. The River Cooter was a large female (approximately 330 mm) probably looking for a nesting site. This represents a new record for Halifax County (Mitchell and Reay 1999, Atlas of Amphibians and Reptiles in Virginia. Special Publication Number 1, Virginia Department of Game and Inland Fisheries, Richmond, Virginia. 122 pp). The turtle was photographed (VHS Digital Archive #259) and released.

Catherine Waller
2119 Rock Barn Rd
Nathalie, VA 24577

Mike Clifford
VHS Herp ID Service

***Storeria occipitomaculata occipitomaculata* (Northern Red-bellied Snake).** VA: Prince George Co., (37,12,59.7 -77,01,03.0]. 10 Oct 2012. Noel Watson.

County Record: Noel Watson found a freshly killed northern red-bellied snake on a small pier at the property of Chippoax Gun Club, along Upper Chippokes Creek, in Prince George County. Susan Watson identified the specimen and photographed it. It appeared to have been preyed upon, as the head had been taken off. It is not certain what happened, but it appeared that the predator that attacked it was possibly startled away from the prey shortly after it was killed, or perhaps it was an avian predator that dropped the prey. This specimen represents a new county record for the Northern Red-bellied Snake in Prince George. (Mitchell J.C. 1994, The Reptiles of Virginia. Smithsonian Press, Washington, D.C. 352pp.; Mitchell and Reay 1999, Atlas of Amphibians and Reptiles in Virginia. Special Publication Number 1, Virginia Department of Game and Inland Fisheries, Richmond VA 122pp; and the Virginia Department of Game and Inland Fisheries' Species Observations (SppObs) Database (formerly known as Collections Database) (1991-2012). Photographic vouchers were deposited in the VHS Archive (#261).

Noel P. and Susan H. Watson
2401 Branchwood Drive
Hopewell, VA 23860

***Terrapene carolina carolina* (Eastern Box Turtle).** VA: Prince George Co., 2401 Branchwood Drive (37,16,46.3 -77,11,09.7). 30 Jun 2007. Susan H. Watson.

Confirmation Record: Susan Watson found an adult male eastern box turtle in a backyard, in Prince George County, on 30 June 2007. The house and yard are surrounded mostly by hardwood forest, and the backyard consists of a large amount of moss. Susan identified the specimen and photographed it. This turtle appeared to be rather old due to the large amount of wear on its shell, and there were a couple of spots of old damage on the plastron, as well as some

slight damage on a small portion of the carapace. This specimen represents a confirmation record for Eastern Box Turtle in Prince George County. Mitchell (1994, The Reptiles of Virginia. Smithsonian Press, Washington, D.C. 352pp.), Mitchell and Reay (1999, Atlas of Amphibians and Reptiles in Virginia. Special Publication Number 1, Virginia Department of Game and Inland Fisheries, Richmond VA 122pp), and the Virginia Department of Game and Inland Fisheries' Species Observations (SppObs) Database (formerly known as Collections Database) (1991-2012) only show one record of uncertain date of the eastern box turtle in Prince George County. A photographic voucher was deposited in the VHS Archive (#273).

Susan H. Watson
2401 Branchwood Drive
Hopewell, VA 23860

***Clemmys guttata* (Spotted Turtle).** VA: Fauquier County, near Bristersburg (N 38° 35' 25.5" W77° 35' 31.5") 13 April 2013. David Ek.

County Record: On 13 April 2013 I observed a turtle near Bristersbug, Va that I was not familiar with. The turtle was in our lawn, near a small riparian corridor. Photographs were sent to Steve Roble who identified the animal as a Spotted Turtle. Several days later I searched the area and found a dead juvenile of the same species, indicating the location of a breeding population nearby. This is the first record of the Spotted Turtle in Fauquier County (Mitchell J.C. 1994, The Reptiles of Virginia. Smithsonian Press, Washington, D.C. 352pp. and Mitchell and Reay 1999, Atlas of Amphibians and Reptiles in Virginia. Special Publication Number 1, Virginia Department of Game and Inland Fisheries. Richmond VA 122pp.). This record fills a gap between Fairfax County to the east and Madison and Page Counties to the west. A digital photograph was deposited in the VHS Archive (#272) as a voucher.

Ek, David A.
Environmental Planner
Fauquier County
Department of Community Development

***Hyla femoralis* (Pine Woods Treefrog).** VA: Prince George Co., intersection of Branchwood Drive and Moody Road (Rt. 641), (37º, 16', 14.4" N -77º, 11', 25.6" W). 7 June 2013. Susan H. Watson.

County Record: Susan Watson heard and recorded pine woods treefrogs calling in the edge of hardwoods and puddles in grassy areas at the intersection of Branchwood Drive and Moody Road (Rt. 641), next to her mailbox, on the evening of 7 June 2013 (times of recordings: 1749 h and 1751 h). This occurred during Tropical Storm Andrea at a time when the area was between heavy rains. The weather at the time of hearing the calls was light to no rain, but still cloudy and thunderstorms heard in the distance. These recordings represent a new county record for pine woods treefrog in Prince George County. Mitchell and Reay (1999, Atlas of Amphibians and Reptiles in Virginia. Special Publication Number 1, Virginia Department of Game and Inland Fisheries, Richmond VA 122 pp.), and the Virginia Department of Game and Inland Fisheries' Species Observations (SppObs) Database (formerly known as Collections Database) (1991-2013) do not report any records of pine woods treefrog in Prince George County. Digital recordings were deposited in the VHS Archive (#260).

Susan H. Watson
2401 Branchwood Drive
Hopewell, VA 23860

Scaphiopus holbrookii (Eastern Spadefoot). VA: Botetourt Co., Rich Patch Mountain (37°40'24.83"N, 79°55'03.22"W). 22 August 2013. Alex Bentley

County Record: On August 22, 2013 a small Eastern Spadefoot Toad was observed hopping across the forest floor at the base of Rich Patch Mountain at an elevation of 406 meters. The area where the toad was observed is roughly 10 meters from Craig Creek Road and .8 km from Craig Creek. The presence of this species in Botetourt County had not been previous documented (Mitchell and Reay 1999, Atlas of Amphibians and Reptiles in Virginia. Special Publication Number 1, Virginia Department of Game and Inland Fisheries, Richmond, Virginia. 122 pp). A Digital Photograph was deposited in the VHS archives (#274).

Alex Bentley
312 N. Broad St.
Salem, Va 24153

***Hyla cinerea* (Green Treefrog).** VA: Prince George Co., 2401 Branchwood Drive (37,16,46.3 -77,11,09.7) 19 Oct 2012, and Chippoax Gun Club (37,12,59.0 -77,01,03.0). 20 October 2012. Susan H. Watson.

County Record: Susan Watson found a green treefrog on an azalea shrub between the front of the house and the front yard, on 19 October 2012. The house and yard are surrounded mostly by hardwood forest, with some open area to the west. The next day, Susan found two green treefrogs amongst a pile of pine branches near other debris, a small pier, gravel road, and mixed woods at the property of Chippoax Gun Club, along Upper Chippokes Creek. One specimen at the Chippoax site appeared to have scratches or marks on its back from the pine needles. Both

these sites are in Prince George County. Susan identified the specimens and photographed them. These specimens represent a new county record for the green treefrog in Prince George County.

Mitchell and Reay (1999, Atlas of Amphibians and Reptiles in Virginia. Special Publication Number 1, Virginia Department of Game and Inland Fisheries, Richmond VA 122 pp.), and the Virginia Department of Game and Inland Fisheries' Species Observations (SppObs) Database (formerly known as Collections Database) (1991-2012) do not report any records of green treefrogs in Prince George County. Susan's photograph vouchers were deposited in the VHS Archive (#275).

Susan H. Watson
2401 Branchwood Drive
Hopewell, VA 23860

***Pseudemys rubriventris* (Northern Red-bellied Cooter).** VA: Nottoway County (Crewe). Backyard of private residence, approximately 100 m from a private pond, (37.188102 -78.069119; NAD 83). 10 June 2011. Jeff Norris.

County Record: Jeff Norris, Nottoway County resident, requested assistance from the Virginia Department of Game and Inland Fisheries in the identification of a turtle he had seen on his property for the second year in a row. The information and photographs (from 2011) that he submitted were confirmed by the terrestrial biologist, Susan Watson, and the state herpetologist, John D. (J.D.) Kleopfer, as *Pseudemys rubriventris* (northern red-bellied cooter). In reviewing the information on this species, it was found that this species was not yet documented in Nottoway County, VA.

Jeff photographed this specimen while she was laying eggs on his property, at approximately 7:10 a.m. on Friday, 10 June 2011. The nesting site is approximately 100 m from a private pond located on the property and approximately 15 m from his backyard deck. He reported that he unfortunately found the nest to be preyed upon when he inspected it approximately one week later. A predator had unearthed the eggs and eaten the contents. He also reported that he had

seen the same type of predation of a turtle nest approximately one year earlier. Instructions on ways to help protect any future nests were provided to Jeff in case he discovers any on his property again.

According to Mitchell and Reay (1999. Atlas of Amphibians and Reptiles in Virginia. Special Publication Number 1, Virginia Department of Game & Inland Fisheries, Richmond, VA. 122pp.) and to the Collections Database at the Virginia Department of Game & Inland Fisheries, *Pseudemys rubriventris* has not been previously recorded from Nottoway County. Digital photographs, were submitted to the VHS Archives (#276).

Susan H. Watson
Virginia Department of Game and Inland Fisheries
4010 W. Broad St.
Richmond, VA 23230

John D. (J.D.) Kleopfer
Virginia Department of Game and Inland Fisheries
3801 John Tyler Memorial Hwy.
Charles City, VA 23030

Articles of interest to Virginia Herpetology:

J. Ryan Niccoli and John D. Kleopfer. 2013. Status of Mabee's Salamander, *Ambystoma maybeei*, in Virginia: A spacial comparison of habitat conditions at sites of known occurance. Banisteria 41:85-92.

Joseph C. Mitchell and Lindsay H. Eiser. 2013. *Siren lacertina* (Greater Siren) from York County: Virginia. Herpetological Review 44(3):471

President's Corner

Greetings my fellow herpers,

It's a bit of a bittersweet President's corner I am writing, as this is my last one. My term of office ended at our last Fall Meeting on October 5, 2013. It has been a pleasure and a privilege, and I do emphasize the word privilege. Being the president of this organization has been a wonderful experience. I want to thank each and every one of you for being part of the VHS and actively contributing to in both time and money to help us move forward and be the best we can be. Without our membership the VHS would not exist.

I would like to give you all my perspective as President of the VHS for the last two years (and also as VP for the previous two years), but before I do, I would like to congratulate our new officers, which were elected on Oct. 5.

Congratulations to:
Kory Steele: President
Mike Salotti: Vice President
David Perry: Treasurer/Secretary

This will be Kory's second term as president after his first term ended two years ago. Kory had come to me and asked me to run for VP 4 years ago and we both had a very aggressive agenda. I know for a fact that Kory will continue to move the VHS forward and do a wonderful job. He has held many roles in the VHS, including editor of our newsletter and has been a member of the Executive Committee for a very long time. He has truly raised the bar for not just the presidency, but for the VHS as a whole.

Mike Salotti is new to the executive committee, however; he has shown dedication to the VHS and has been very helpful and involved in our organization for the last couple of years. He's been showing up to our surveys and has shown that he is more than capable to help lead the VHS in a positive direction. The key to the success of the VHS is continuity. We always need a fresh and new perspective in the Executive Committee and Mike will give the VHS fresh and helpful insight. Mike also works for the Virginia State Parks, which makes him a very valuable addition to the VHS.

Now on to David Perry. I first met David when I was heavily involved in a project called "Snake Force 1" which was a side project that was started by Joy Ware (former Research Committee Chair) about 7 or so years ago. David has been very active with the VHS in many ways since he moved to Virginia. As my VP, David was there to cover me every single time I needed him. He took the initiative in organizing surveys, which is not an easy task. It takes lots of hard work in coordinating a survey. He had to contact various federal and state agencies to get permits, the various park managers, etc. David has been integral in helping my agenda as President, and I could not have done it without him. I want to give a very special thanks to David for all of his help. He would have been a shoe in for President, but has decided to selflessly run for the job of Treasurer/Secretary, which is a very difficult job but a very important one. Additionally, David has volunteered to run the Conservation Committee, which has been vacated since Tim Christensen resigned. Again, I would like to thank David for his hard work and dedication to the VHS and I know he will continue to be a valuable asset to the VHS.

I also would like to thank the rest of the Executive Committee, John White (our wonderful Webmaster. I keep hearing about how awesome our webpage is and it's all thanks to John.),

Paul Sattler (our Catesbeiana editor. He's done an amazing job), Jason Gibson (our Herp Blitz guru and Election Committee chair), Patricia Crane (our online store manager), Mike Clifford (our Education Committee chair), newly appointed Research Committee Chair, Michael Meyer, Susan Watson (our awesome newsletter editor and winner of this year's member of the year award) and last but certainly not least, Emily Steele who has been our treasurer/secretary since I can remember. Emily retired from that position this year and has truly done an outstanding job. I extend a huge gratitude to Emily for all of her hard work and dedication. As part of our executive committee I want to also give a special thanks to our advisory committee: Kelly Geer, Rachel Goodman, John Orr, and Caroline Seitz. Every single one of them has given wise advice to the VHS.

Now, I would like to share with you my perspective as President of what the Virginia Herpetological Society represents and what it means to me.

The Virginia Herpetological Society is not just a club; it is not like any of the other "herp societies" out there whose primary goal is to promote the herpetoculture hobby. The VHS is much, much more than that. The VHS is considered to be a scientific authority on Virginia's Herpetofauna. To prove that, just this year alone we had over 500 snake identification requests from all over the state. Why do people come to us as opposed to other organizations or state agencies? The reason, I believe, is because the VHS has some of the most knowledgeable experts in the field that can give the wisest and most accurate advice to the community on all issues relating to our herpetofauna including the biology and ecology of reptiles and amphibians and regarding our state regulations and laws. Additionally, our leadership team is continuously asked to be interviewed for radio shows, news articles, magazine articles (including the statewide magazine Virginia Wildlife) and even TV news. This speaks volumes regarding the reputation we have gained over the past 55 years.

The Virginia Herpetological Society is the "go to" place for help with all questions relating to reptiles and amphibians. I have even received a request for permission to use one of our marine turtle pictures to be used in a book published by Italian herpetologists who have written an atlas on the herpetofauna of the Campania region of Italy. Since I'm Italian (well half Italian but born and raised there, I found this personally gratifying). The Herpetological Society of Italy and the Zoological Union of Italy published the book this year. So yes, we've even gone international.

The VHS membership consists of professionals in their respective fields in herpetology. We have many PhDs and their students who work at universities across Virginia and we also have wildlife biologists who work for the Dept. of Game and Inland Fisheries, Federal Fish and Wildlife Service and people working for the Smithsonian and the National Zoo. This is why we are a one-stop shop for our community to seek guidance on issues relating to our local herpetofauna.

I've talked a bit about our technical expertise. I would like to talk about what really makes the VHS special, the heart and soul, so to speak of the VHS. Our membership not only consists of experts, but more importantly we actively engage the community and we invite our community to join the VHS regardless of their level of knowledge or expertise. I am particularly fond of our younger members and how the VHS is helping build an interest in protecting our herptofauna in the younger generation. Our surveys attract people of all ages and levels of expertise; and that to me is one of the biggest values, to reach out to our community and promote a love for herpetology as well as for all wildlife and our environment. I have seen people deathly afraid of snakes come out to our surveys with the curiosity and willingness to learn. This is unequivocally

one of the most important missions of the VHS: to educate and to help dispel the notion that snakes (or other herps) are to be feared and killed, but instead to be cherished and protected.

Citizen science. I am a believer in citizen science, which is exactly part of the mission of the VHS even though I believe I'm the first person to use this word to describe the VHS. Our surveys are not only fun, but are scientific in nature and it goes to show that anybody can do science and add to our scientific knowledge. The VHS is a leader in Virginia when it comes to Citizen Science and I think we need to do more to promote and advertise the concept of citizen science. By joining the VHS, you are not only going out to have fun, but you are participating in a scientific project that each person and the community own and have been part of. The VHS is a catalyst for citizen science. So keep coming out for our surveys, because it is you who are making a difference.

Lastly, I would like to talk about some accomplishments over the last two years under my leadership. I think the biggest accomplishment was to take our Catesbeiana journal from a black and white paper format, to a colorful digital format. This not only saved us money (and paper), but it allows the journal to be much more enjoyable to read with color graphs and color pictures. It will give us flexibility on how we format the journal. The money we are going to save (and have already saved) on printing and mailing, we will be using to purchase equipment for our surveys, award to grants for herpetological research and to help enhance the fall meeting experience. Under my leadership, I have achieved fiscal responsibility while modernizing the VHS.

I was asked to represent the VHS for the "Dangerous Animal Initiative" workgroup. The workgroup was made up of 30 stakeholders ranging from state agencies, law enforcement, zookeepers, private owners of animals, HSUS, animal shelters, circus representatives, zoo accrediting agencies, and other organizations. The mission of the workgroup was to come up with a consensus in developing guidelines for regulations regarding the ownership of dangerous and exotic animals. The Governor mandated this workgroup after a backlash from the zoo and reptile community in response to a knee-jerk legislation that would have banned certain reptiles as well as other animals from being kept as pets in Virginia. One of the missions of the VHS is to dispel the demonization of reptiles, especially snakes and as a member of this workgroup, I encouraged the group to look at empirically and science based evidence as to why we should ban the ownership of certain snakes and other reptiles. We believe that responsible snake owners should be allowed to own snakes, even venomous ones, and the VHS would support sensible laws such as certification and training prior to owning venomous snakes. However, we do not support an outright ban. You can see the full report at the link:
http://virginiaanimals.files.wordpress.com/2012/08/dai-final-report-combined.pdf

I have been able to reach out to the reptile hobby community and form alliances with them, because I believe that even though the VHS is not primarily a reptile husbandry organization, educating the reptile husbandry community and forming alliances is beneficial for everyone. The reptile husbandry community has historically been hostile to the VHS. I saw no reason for this irrational hostility and have made some contacts with groups like USARK and SAVES.

I was almost able to get Senator Dick Black to sponsor legislation this year that would have officially assigned a state reptile. I met with Senator Black in his home office last year and he said he would try to sponsor a bill that would have given the state an official state reptile. We sent out a survey to our membership to let our community choose what they would like

as a state reptile and I sent that information to Senator Black. Unfortunately, Senator Black never sponsored the bill and after numerous phone calls and emails asking him if he would try to sponsor it next year, I never received a response. As my position of Past-President I will certainly continue to seek for this bill.

Last year I brought the VHS to Washington DC to have our Fall Meeting at the National Zoo. This was not unprecedented as in the early days of the VHS, meetings were regularly held at the National Zoo. Reconnecting with the Smithsonian seemed to me, a natural thing to do for the VHS. The Smithsonian Institute is now working on research with Virginia Salamanders including the hellbender, so it was a natural fit for the VHS to have a meeting at the National Zoo. It was a successful event and our speakers were amazing. For the first time I was able to get a neuroscientist who is studying the neuroscience of amphibian prey capture behavior as our keynote speaker as well as bringing herpeto-paleontology to the VHS. One of our speakers last year was Jason Osborne with Paleo-Quest who was also a winner of a VHS grants to study the fossils of early reptiles in Virginia. I believe this is something that the VHS should be more involved in to add to our knowledge of the evolution of reptiles and amphibians here in Virginia.

In conclusion, I think I was able to shift the paradigm and I believe that the VHS will continue to move in the right direction. Most important of all, the VHS is each and every one of you. Let's keep moving this wonderful organization forward. Thank you for allowing me to be your president.

Regards,
Larry Mendoza
President, VHS

Minutes of the Spring 2013 VHS Meeting

Virginia Herpetological Society
Minutes of the Spring Meeting
Back Bay National Wildlife Refuge
Virginia Beach, VA 23456
May 3, 2013

The meeting was called to order at 6:42pm by the president, Larry Mendoza, with 18 in attendance. The agenda was provided to all attending.

The following old business was reviewed: Next officer election will be October 2013. Positions up for new election will be president, vice president, and treasurer/secretary. We currently have 2 nominations for the president and vice president positions, but no nominations for treasurer/ secretary.

Committee Reports

Newsletter, Susan Watson: Accepting material for the August newsletter, including book reviews. She needs material by late July/early August and will send out an email notification as the time gets closer.

Catesbeiana, Paul Sattler: Sent out the first digital version of Catesbeiana. With the digital version write-ups can now include graphs. Paul will send 8.5x11 inch paper copies to the archive and science museums.

Past President, Kory Steele: Is continuing with herp IDs, needs help with Facebook IDs as the requests have greatly increased. Will work on creating a template for survey reports out in the field, which will include GPS coordinates of finds; these logistics are being worked on.

Education, Mike Clifford: Unable to attend, report not made available.

HerpBlitz, Jason Gibson: Upcoming survey June 8 and 9 on 4,000acres of Dick Cross, WMA in Mecklenburg County. Considering the southwest region of Virginia for next year's survey.

Cafepress, Patricia Crane: Unable to attend, but reported that the store should be looked at as a means of advertising and not a method for profit.

Treasurer-Secretary, Emily Steele: 216 members, 1556 Facebook fans. Current bank account balance $10,692.81.

Website, John White: Unable to attend, no report made available.

Advisory, John Orr, Rachel Goodman, Caroline Seitz, Kelly Geer: No reports made available.

New business

- Research committee new chair is Mike Meyer. He will help standardize a template for survey reports being published in Catesbeiana.
- Will add new member to the advisory committee after elections in October.

Meeting was adjourned at 7:30pm.

Emily Steele
VHS Treasurer-Secretary

Treasurer's Report

Treasurer's Report by Emily Steele

Balance on hand 04/21/2013	**$10,409.55**	
Receipts		
New memberships		$379.00
Renewed memberships		$346.00
Donation from Caroline Seitz		$150.00
Cafe Press Commission		$ 66.29
Total receipts:		$938.29
Disbursements		
PayPal transaction fees		$26.03
Donation to Natalie Gilbert for her work towards turtle habitat at Fairfax County Riverbend Park		$125.00
Web hosting renewal		$227.73
VHS Custom writing pens		$275.00
Total disbursements:		$653.76
Balance on hand 09/29/2013	**$10,694.08**	
Total Society members:	245	
Total Facebook fans:	1,990	

Fall 2013 Meeting Summary

VHS 2013 Fall Meeting
Virginia Department of Game and Inland Fisheries Office
4010 W. Broad Street, Richmond VA

There were four major oral presentations.
The list of speakers was as follows:

Salamanders, Jewels of the Appalachia – Matt Neff (Smithsonian National Zoological Park)
Dangerous Animal Initiative – David Whitehurst (Virginia Department of Game and Inland Fisheries)
Foraging Ecology, Movement Patterns and Conservation of Diamond Back Terrapins – Diane Tulipani (Virginia Institute of Marine Science)
Herpetological Research and Conservation at the Virginia Aquarium –Stephen Knoop (Virginia Aquarium)

There were four Poster Presentations.
The Poster Presentations were as follows:

Herpetological Survey results on the Campus of Hampden-Sydney College – Edward Davis Carter (Hampden-Sydney College)
The sustainability of Virginia's Commercial Snapping Turtle Harvest – Ben Colteaux (Virginia Commonwealth University)
Developing a Predictive Distribution for the Wood Turtle in Virginia: Novel Sampling and Occupancy Modeling – Lorien Lemmon (Smithsonian Institute)
Modeling the Hydroperiod of *Ambystoma bishop* Breeding Wetlands – Houston Chandler (Virginia Tech)

There were three awards given at the Photography Contest. First place was awarded $100 (photograph of a Green Frog), Second place $50 (photograph of a Black Racer), and Third place $25 (photograph of a Copperhead).

Susan Watson was awarded the Member of the Year for her many volunteered hours spent on the VHS Newsletter and single-handedly obtaining and updating the VHS Collecting Permits required to perform our many surveys each year. Many thanks to Susan for her tireless work on behalf of the VHS.

At the end of the Business Meeting a new slate of Officers for the next two years was elected. The new officers are:

President: Kory Steele
Vice-President: Mile Salotti
Secretary/Treasurer: Dave Perry

Field Notes

The field notes section of *Catesbeiana* provides a means for publishing natural history information on Virginia's amphibians and reptiles that does not lend itself to full-length articles. Observations on geographic distribution, ecology, reproduction, phenology, behavior, and other topics are welcomed. Field Notes will usually concern a single species. The format of the reports is: scientific name (followed by common name in parentheses), state abbreviation (VA), county and location, date(s) of observation, observer(s), data and observations. The name(s) and address(es) of the author(s) should appear one line below the report. Consult the editor if your information does not readily fit this format. **All field notes must include a brief statement explaining the significance of the record** (e.g., new county record) **or observation** (e.g., unusual or rarely observed behavior, extremely early or late seasonal record, abnormal coloration, etc.). Submissions that fail to include this information are subject to rejection. Relevant literature should be cited in the body of the text (see Field Notes in this issue for proper format). All submissions will be reviewed by the editor (and one other person if deemed necessary) and revised as needed pending consultation with the author(s).

If the field note contains information on a **new county (or state) record**, **verification is required in the form of a voucher specimen** deposited in a permanent museum (e.g., Virginia Museum of Natural History) or a **photograph** (print, slide, or digital image) **or recording** (digital recording of anuran calls) deposited in the archives of the Virginia Herpetological Society. Photographs and recordings should be sent to the editor for verification and archiving purposes; the identity of voucher specimens must be confirmed by a museum curator or other qualified person. Include the specimen number if it has been catalogued. Prospective authors of distribution reports should consult the VHS website (County/City Herp Lists) to determine if they may have a new county record. New distribution records from large cities that formerly constituted counties (Chesapeake, Hampton, Newport News, Suffolk, and Virginia Beach) are acceptable, but records from smaller cities located within the boundaries of an adjoining county will only be published if the species has not been recorded from that county. Species identification for observational records (e.g., behavior) should be verified by a second person whenever possible.

PHOTOGRAPHS

High contrast photographs (digital images) of amphibians and reptiles will be considered for publication if they are of good quality and are relevant to an accompanying article or field note. Published photographs will be deposited in the Virginia Herpetological Society archives.